

EXHIBIT 1

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TYLER DIVISION**

TRACBEAM, L.L.C.,

Plaintiff,

v.

AT&T INC.; AT&T MOBILITY L.L.C.;
METROPCS COMMUNICATIONS, INC.;
METROPCS WIRELESS, INC.; TEXAS RSA
7B3, L.P. d/b/a PEOPLES WIRELESS
SERVICES; SPRINT NEXTEL
CORPORATION; SPRINT SPECTRUM L.P.;
NEXTEL OF CALIFORNIA, INC.; NEXTEL
COMMUNICATIONS OF THE MID-
ATLANTIC, INC.; NEXTEL OF NEW YORK,
INC.; NEXTEL SOUTH CORP.; NEXTEL OF
TEXAS, INC.; NEXTEL WEST CORP.;
CELLCO PARTNERSHIP d/b/a VERIZON
WIRELESS; GOOGLE, INC.; and SKYHOOK
WIRELESS, INC.,

Defendants.

Case No. 6:11-cv-00096-LED

DEFENDANTS' SUPPLEMENTAL INVALIDITY CONTENTIONS

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I. INTRODUCTION

Pursuant to Patent Rule 3-6(b), Defendants AT&T Inc., AT&T Mobility L.L.C., MetroPCS Communications, Inc., MetroPCS Wireless, Inc., Cellco Partnership d/b/a Verizon Wireless, Google Inc., and Skyhook Wireless, Inc. collectively serve these Supplemental Invalidity Contentions on Plaintiff TracBeam, L.L.C, as well as the accompanying document production required by Patent Rule 3-4(b).¹ These Supplemental Invalidity Contentions are based on Defendants' current knowledge of the patents-in-suit, the prior art, and Plaintiff's contentions. Defendants continue to pursue discovery and to investigate and analyze the prior art.

In Plaintiff's September 16, 2011 Disclosure of Asserted Claims and Infringement Contentions ("Infringement Contentions"), Plaintiff asserted Claims 1, 7, 10, 17, 25, 27, 28, 36, 65, 69, 106, 162, 185, 212, and 215 of U.S. Patent No. 7,764,231 (the "'231 Patent") and Claims 27, 33, 34, 36, 44, 51, 56, and 67 of U.S. Patent No. 7,525,484 (the "'484 Patent") (collectively, the "Asserted Claims" of the "Asserted Patents"). The '231 Patent issued from the U.S. national stage application of International PCT Application No. PCT/US97/15892 (the "PCT Application") and claims priority to three U.S. provisional applications.² The '484 Patent is a continuation of the application that issued as the '231 Patent.

To the extent that these Supplemental Invalidity Contentions rely on or otherwise embody particular constructions of terms or phrases in the Asserted Claims, Defendants are not proposing any such constructions as proper constructions of those terms or phrases at this time.

¹ Defendants previously produced documents pursuant to Patent Rule 3-4(b) in conjunction with their original Invalidity Contentions served on December 16, 2011. Defendants will produce additional documents in conjunction with these Supplemental Invalidity Contentions. Defendants will make available for inspection and copying any item of prior art identified in their original Invalidity Contentions or in these Supplemental Invalidity Contentions that does not appear in the accompanying Patent Rule 3-4(b) document production.

² U.S. Provisional Application Nos. 60/025,855, 60/044,821, and 60/056,590.

The Court has established separate deadlines for the parties' proposed claim constructions, and Defendants will disclose their proposed constructions according to those deadlines. For purposes of these Supplemental Invalidity Contentions, Defendants may adopt alternative claim construction positions. In particular, certain of these Supplemental Invalidity Contentions, including the charts attached hereto as Exhibits 1 – 23, may be based on claim constructions that appear to underlie Plaintiff's Infringement Contentions.³ Defendants, however, do not concede that Plaintiff's apparent constructions are proper, and reserve the right to contest any such constructions. Moreover, nothing herein admits in any way that any Accused Instrumentality, or any of Defendants' other products or services, infringes any of the Asserted Claims. Pursuant to Patent Rule 3-6, Defendants reserve the right to supplement, modify, or otherwise amend these Supplemental Invalidity Contentions based on the Court's claim construction ruling and/or arguments or positions taken during the claim construction process.

Throughout the attached Exhibits, Defendants provide examples of where references disclose subject matter recited in preambles, without regard to whether the preambles are properly considered to be limitations of the Asserted Claims. Defendants reserve the right to argue that the preambles are or are not limitations during the claim construction proceedings in this case. Moreover, Defendants reserve the right to argue that any claim elements of the Asserted Claims do not in fact limit the scope of the Asserted Claims.

³ Plaintiff's Infringement Contentions appear to be based on an improperly broad interpretation of the Asserted Claims. Thus, certain of these Supplemental Invalidity Contentions may likewise be based on Plaintiff's overbroad interpretations. Further, Plaintiff's Infringement Contentions are deficient at least because they are not in compliance with the Court's local Patent Rules. Defendants reserve the right to supplement and/or modify these Supplemental Invalidity Contentions should Plaintiff modify its positions regarding the scope of the Asserted Claims, for example, by amending its Infringement Contentions.

II. STATE OF THE ART

At the time of the alleged invention of named inventors Dennis J. Dupray and Charles L. Karr (collectively “Applicants”), location determining technology was widely known, understood, and implemented by those of skill in the art. Examples of location determining technologies of the time include inertial navigation systems, GPS, GLONASS, Loran-C, TACAN, VOR, Omega, and various other ground-based technologies implemented using base stations, such as AM/FM radio towers, TV broadcast towers, and/or cell towers. However, as was known by those of skill in the art, each location determining technology was accompanied by its respective limitations. For example, inertial navigation systems, which calculated the current position based on the previously calculated position, suffered from the cumulative build-up of errors over time, ultimately requiring an accurate position to be periodically supplied by another source. Satellite based technologies such as GPS typically excelled outdoors and in rural environments, while suffering indoors and in urban environments due to obstructions from buildings and other structures. Base station location technologies, on the other hand, typically excelled in urban areas due to the dense placement of the base stations, while suffering in rural areas where the base stations were intermittently spaced.

Due to the respective limitations of each technology, those of skill in the art integrated multiple location technologies in order to compensate for the respective limitations associated with the isolated use of any particular technology. For example, in the field of navigation, those skilled in the art applied a widely known and well established concept known as the “prudent navigator” to wireless location technology. This concept was premised on the fundamental idea that a prudent navigator never relies on any single source of navigational information. The

applicability of this well-known concept to wireless location technology is discussed, for example, in “Advantages of Interoperability to the Prudent Navigator,” by William J. Thrall.⁴

The Federal Aviation Administration (FAA) began leveraging wireless location technology for air traffic control and navigation purposes at least as early as 1944.⁵ After experimenting with a variety of location technologies, including GPS, the FAA determined that no single technology was sufficiently reliable. As a result, in the 1980s the FAA began exploring flight management systems that integrated multiple wireless location technologies, such as TACAN, Omega, Loran-C, and GPS, among others.⁶ During this time, various intelligent vehicle highway systems (IVHS) also began leveraging wireless location technology for vehicle navigation and fleet management solutions, including, for example, the systems described in “A Comparison of IVHS Progress in the United States, Europe, and Japan,” by R.L. French & Associates.⁷ Similar to the FAA, those skilled in the art were not satisfied with the performance of any one wireless location technology and began to explore the integration of multiple wireless location technologies for vehicle navigation and fleet management solutions.⁸ Many vehicle navigation and fleet management solutions also utilized wireless communication, such as cellular technology, for communicating vehicle locations and mapping information, as well as for leveraging the location determining capabilities of the wireless communication

⁴ Thrall, William J., “Advantages of Interoperability to the Prudent Navigator,” Proceedings of the 48th Annual Meeting of The Institute of Navigation, Dayton, OH, June 1992, pp. 47-50.

⁵ See “FAA Historical Chronology 1926-1996” at 32 (“In 1944, incorporating wartime radio advances, CAA began testing an improved, static-free, very high frequency omnidirectional radio range (VOR) at its Experimental Station in Indianapolis”).

⁶ See, e.g., FAA Advisory Circular 20-101C, “Airworthiness Approval of Omega/VLF Navigation Systems For Use in the U.S. National Airspace System (NAS) and Alaska,” September 12, 1988; FAA Advisory Circular 20-138, “Airworthiness Approval of Global Positioning System (GPS) Navigation Equipment For Use as a VFR and IFR Supplemental Navigation System,” May 25, 1994; and FAA Advisory Circular 20-130A, “Airworthiness Approval of Navigation or Flight Management Systems Integrating Multiple Navigation Sensors,” June 14, 1995.

⁷ See also “The Evolving Roles of Vehicular Navigation,” Robert L. French (1987).

⁸ See, e.g., U.S. Patent No. 5,422,813 to Schuchman and U.S. Patent No. 5,724,660 to Kauser.

networks.⁹ As the use of cellular technology increased, wireless location technology and cellular technology were utilized together for purposes beyond vehicle navigation and fleet management. For example, in 1994, the FCC proposed various rules requiring cellular service providers to locate emergency 9-1-1 (E911) callers, and these proposed rules were adopted in 1996.¹⁰ Various wireless location systems and technologies for complying with the FCC's E911 rules were evaluated by the wireless communications industry, including those discussed in the "Survey of Location Technologies to Support Mobile 9-1-1," by C.J. Driscoll & Associates. Wireless location technology was also utilized with cellular technology for other purposes, such as directory services and personnel supervision.¹¹

All of these prior art solutions were widely known, understood, and implemented by those of skill in the art at the time of the alleged invention. In addition, implementing these prior art solutions using multiple wireless location technologies was also widely known, understood, and implemented by those of skill in the art at the time of the invention. These prior art solutions all depended upon the ability to accurately, reliably, and quickly determine a location and to communicate and/or present the location in the appropriate manner. Because these prior art solutions shared these common objectives, it was widely recognized by those skilled in the art that advances in wireless location technology with respect to a particular prior art solution were equally applicable to other prior art solutions involving wireless location technology. Thus, one of ordinary skill in the art would have found it obvious to combine and/or modify prior art involving wireless location technology with concepts from other prior art in the same field.

⁹ See, e.g., "Using Cellular Telephones for Automatic Vehicle Tracking," D.A. Carter et al. (1985); see also U.S. Patent No. 5,327,144 to Stilp, et al.

¹⁰ See FCC E911 Notice of Proposed Rule Making, CC Docket No. 94-102, released October 19, 1994; see also FCC E911 First Report and Order, CC Docket No. 94-102, released July 26, 1996.

¹¹ See, e.g., U.S. Patent No. 5,627,549 to Park, U.S. Patent No. 5,561,704 to Salimando, and U.S. Patent No. 6,999,779 to Hashimoto.

Appendix Q provides an exemplary identification of prior art evidencing the state of the art at the time of the alleged invention, including the prior art identified and/or discussed in these Supplemental Invalidity Contentions. Each of the prior art references identified in Appendix Q qualifies as prior art at least under 35 U.S.C. §§ 102(a), (b), and/or (e) and invalidates the Asserted Claims and/or renders them obvious.

III. THE ASSERTED CLAIMS ARE INVALID BASED ON THE PRIOR ART [P.R. 3-3(A), (B) AND (C)]

Pursuant to subsections (a), (b), and (c) of Patent Rule 3-3, Defendants contend that the Asserted Claims are invalid as anticipated by the prior art under various subsections of 35 U.S.C. § 102 and/or as obvious in view of the prior art under 35 U.S.C. § 103. The charts attached as Exhibits 1 - 23 to these Supplemental Invalidity Contentions provide examples of where pieces of prior art identified by Defendants disclose either expressly or inherently, and/or renders obvious, each element of the Asserted Claims. Accompanying Exhibits 1 - 23 are Appendices A - P that provide supplemental examples of prior art references disclosing certain claim elements that were ubiquitous in the prior art (as discussed in Exhibits 1 - 23). Defendants have endeavored to cite to the most relevant portions of the identified prior art. However, other portions of the identified prior art may additionally disclose, either expressly or inherently, and/or render obvious one or more elements or limitations of the Asserted Claims. Although Defendants have identified at least one citation per element for each reference, each and every disclosure of the same element in the references is not necessarily identified. The lack of a citation for an element should not be deemed an admission that the element is not disclosed or is not inherent in the reference. In an effort to focus the issues, Defendants are identifying only exemplary portions of cited references. Defendants reserve the right to rely on uncited portions of the identified prior art to establish the invalidity of the Asserted Claims. Moreover,

Defendants reserve the right to rely on uncited portions of the identified prior art, other prior art, references that show the state of the art (irrespective of whether such references themselves qualify as prior art to the Asserted Patents), and/or expert testimony to provide context to or aid in understanding the cited portions of the identified prior art.

Where Defendants cite to a particular drawing or figure in the accompanying charts, the citation encompasses the description of the drawing or figure, as well as any text associated with the drawing or figure. Similarly, where Defendants cite to particular text concerning a drawing or figure, the citation encompasses that drawing or figure as well.

Although certain prior art references are listed as evidence for particular prior art solutions, certain of those prior art references describe, relate to, and are evidence of multiple prior art solutions that render the Asserted Claims invalid. Defendants reserve the right to rely on any identified piece of prior art as evidence supporting any of those relevant prior art solutions. Defendants also reserve the right to rely on any identified piece of prior art individually to anticipate all of the Asserted Claims and/or to render obvious all of the Asserted Claims in view of the knowledge of one of ordinary skill in the art or in combination with other references identified herein.

To the extent these Supplemental Invalidity Contentions identify any prior art patents and/or printed publications under 35 U.S.C. §§ 102(a) or (b), Defendants may also rely on those patents and/or printed publications as evidence that the described invention was known or used by others under 35 U.S.C. § 102(a) or (g)(2), or in public use or on sale under 35 U.S.C. § 102 (b).

Certain pieces of identified prior art inherently disclose features of the Asserted Claims. Defendants reserve the right to rely on inherency to demonstrate the invalidity of the Asserted

Claims. Moreover, certain prior art references and solutions may inherently disclose certain features of the Asserted Claims as construed by Plaintiff. Defendants may rely on cited or uncited portions of the prior art, other documents, and expert testimony to establish the inherency of certain features of the prior art to invalidate the Asserted Claims. Defendants also reserve the right to rely on any reference identified in these Supplemental Invalidity Contentions or any other reference to prove that the solution or references herein are enabled or to explain the meaning of a term used in the solutions or any reference.

To the extent that Plaintiff argues that a piece of prior art does not disclose an element or limitation, Defendants reserve the right to rely on any combination of the prior art disclosed in these Supplemental Invalidity Contentions, including the charts attached hereto as Exhibits 1 - 23, the knowledge of those skilled in the art, and/or other prior art to show that it would have been obvious to include the allegedly missing element or limitation. The reasons or motivation to combine the prior art would include, for example, the fact that the prior art is all in the field of wireless location determining technology, and one of ordinary skill in the art implementing a system to determine the location of mobile stations using more than one type of location determining technology would be motivated to investigate the various existing solutions, systems, publications, and/or patents describing wireless location determining technology identified herein to address his particular needs. The combinations and modifications of the prior art to invalidate the Asserted Claims would have arisen from ordinary innovation, ordinary skill, or common sense, or would have been obvious to try or otherwise predictable.

A person of ordinary skill would have been motivated to combine identified prior art based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. Design incentives and other market forces would have

prompted those combinations and modifications. For example, in the prior art, there were well-recognized design needs and market pressures to increase the speed, accuracy, and reliability of wireless location technology. Moreover, some pieces of prior art refer to or discuss other pieces of prior art, illustrating the close technical relationship among the prior art. To the extent any piece of prior art refers to or discusses other pieces of prior art, either expressly or inherently, it would have been obvious to combine those pieces of prior art for that reason.

Defendants contend that the Asserted Claims are obvious because they merely arrange old elements, with each performing the same function that had been known, to perform and yield no more than what one of ordinary skill would expect from such an arrangement. Because there were a finite number of predictable solutions in the art of determining the location of mobile stations using more than one location determining technology, it would have been obvious to a person of ordinary skill in the art to pursue the known options. A person skilled in the art of wireless location determining technology would have been familiar with all the claim elements that the patentee used to distinguish the prior art during prosecution. The identified prior art references merely use those familiar elements for their primary or well-known purposes and in a manner well within the ordinary level of skill in the art. Accordingly, common sense and the knowledge of the prior art render the Asserted Claims invalid as well.

As discussed above in Section II with respect to the state of the art, integrating multiple wireless location technologies was well-known to those of skill in the art at the time of alleged invention. One of ordinary skill in the art would have found it obvious to combine and/or modify prior art involving multiple wireless location technologies with concepts from other prior art in the field of location determining technology.

Various additional exemplary combinations and modifications, and reasons or motivation to implement those combinations and modifications, are provided below. In addition to the prior art identified below and the accompanying invalidity claim charts, Defendants also rely on the “Background of the Invention” and other relevant portions of the Asserted Patents and their related patents; the file histories of the Asserted Patents and their related patents, including the references cited during prosecution; and other evidence, including fact and expert testimony about that evidence, to prove that the Asserted Claims are anticipated and/or rendered obvious under 35 U.S.C. §§ 102 and 103. Defendants reserve the right to supplement or amend these Supplemental Invalidity Contentions with additional positions on anticipation or obviousness in response to any allegation by Plaintiff that any of the prior art, or any combination of prior art, does not disclose one or more elements of the Asserted Claims. In addition, Defendants reserve the right to supplement these Supplemental Invalidity Contentions with additional prior art and/or arguments should Plaintiff allege that the Asserted Claims are entitled to a priority date prior to September 9, 1996.¹²

A. U.S. Patent No. 5,365,447 (Dennis)

U.S. Patent No. 5,365,447 to Dennis, entitled “GPS and Satellite Navigation System,” issued November 15, 1994 (the “Dennis Patent”). The Dennis Patent is entitled to a priority date at least as early as September 20, 1991. The Dennis Patent qualifies as prior art under at least 35 U.S.C. §§ 102(a) and (b). The chart attached hereto as Exhibit 1 provides examples of where the

¹² In its Infringement Contentions, Plaintiff alleged that “[e]ach of the Asserted Claims is entitled to a priority date of at least September 9, 1996.” In addition, in its response to Defendants’ Common Interrogatory No. 2, Plaintiff identified purported dates of conception for certain Asserted Claims as early as May of 1995. However, Plaintiff has not currently alleged that any Asserted Claims are entitled to a priority date prior to September 9, 1996, and Defendants will object to any attempt by Plaintiff to establish an earlier priority date than what was provided pursuant to Patent Rule 3-1(e). Further, Defendants also contend that the Asserted Claims are not entitled to Plaintiff’s alleged September 9, 1996 priority date because the Asserted Claims are not supported by the provisional applications to which the Asserted Patents claim priority.

Dennis Patent discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the Dennis Patent does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Dennis Patent with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Dennis Patent to use other wireless location technologies, such as those described by the prior art from Appendices A, E, K, L, and N. More specifically, it would have been obvious to combine or modify the Dennis Patent to use the time of arrival or time difference of arrival location technologies described by the prior art from Appendix A, including, for example, U.S. Patent No. 5,327,144 to Stilp et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 6,748,226 to Wortham; and U.S. Patent No. 6,236,365 to LeBlanc et al. It would have also been obvious to combine or modify the Dennis Patent to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the Dennis Patent to use the differential GPS and/or assisted GPS technologies described by the prior art from Appendix K, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,365,450 to Schuchman et al.; and U.S. Patent No. 5,841,396 to Krasner. It would have also been obvious to combine or modify the Dennis Patent to use the

signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article¹³; the Maturino-Lozoya Article¹⁴; and the Junius Article¹⁵. It would have also been obvious to combine or modify the Dennis Patent to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Dennis Patent in this manner because the Dennis Patent and the above-referenced prior art from Appendices A, E, K, L and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the Dennis Patent to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Dennis Patent to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al. and U.S. Patent No. 4,806,940 to Harral et al. One of ordinary skill in the art would have been motivated to combine or modify the Dennis Patent in this manner because the Dennis Patent and the above-referenced prior art from Appendix D are all directed towards wireless location technology, and it would have been obvious to combine or modify the Dennis Patent to implement its accuracy and display functionality using concepts from prior art in the same field.

¹³ H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

¹⁴ H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

¹⁵ Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

As another example, it would have been obvious to combine or modify the Dennis Patent to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; the Mobile Information Systems Impact Study¹⁶; and the Rappaport Article¹⁷. One of skill in the art would have been motivated to combine or modify the Dennis Patent in this manner because the Dennis Patent and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the Dennis Patent.

As another example, it would have been obvious to combine or modify the Dennis Patent to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,602,903 to LeBlanc; U.S. Patent No. 5,717,737 to Doviak et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Dennis Patent in this manner because the Dennis Patent and the above-referenced prior art from Appendix B are all directed towards wireless location technology, and it would have been obvious to combine or modify the Dennis Patent to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Dennis Patent to use a mobile unit that is capable of two-way voice communication as described by the prior art from Appendix M, including, for example, U.S. Patent No. 5,724,660 to Kauser et al.; U.S.

¹⁶ Jouko A. Parviainen, et al., "Mobile Information Systems Impact Study," Ontario Ministry of Transportation, August 1988.

¹⁷ T.S. Rappaport, et al., "Position Location Using Wireless Communications on Highways of the Future," IEEE Communications Magazine, October 1996.

Patent No. 5,604,765 to Bruno et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 5,552,772 to Janky; U.S. Patent No. 5,646,630 to Sheynblat; and U.S. Patent No. 5,420,594 to FitzGerald. One of ordinary skill in the art would have been motivated to combine or modify the Dennis Patent in this manner because the Dennis Patent and the above-referenced prior art from Appendix M are all directed towards wireless location technology, and it would have been obvious to combine or modify the Dennis Patent to implement its communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Dennis Patent to determine velocity, acceleration, and/or geographical features near a mobile unit as described by the prior art from Appendix O, including, for example, U.S. Patent No. 6,487,500 to Lemelson et al.; U.S. Patent No. 5,657,025 to Ebner et al.; U.S. Patent No. 5,512,903 to Schmidtke; U.S. Patent No. 5,490,073 to Kyrtsov; U.S. Patent No. 5,119,101 to Barnard; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi et al.; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 4,402,049 to Gray; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,517,419 to Lanckton et al.; U.S. Patent No. 5,452,211 to Kyrtsov et al.; U.S. Patent No. 5,293,318 to Fukushima; U.S. Patent No. 5,276,451 to Odagawa; U.S. Patent No. 5,374,933 to Kao; and U.S. Patent No. 5,627,549 to Park. One of ordinary skill in the art would have been motivated to combine or modify the Dennis Patent in this manner because the Dennis Patent and the above-referenced prior art from Appendix O are all directed towards wireless location technology, and it would have been

obvious to combine or modify the Dennis Patent to implement its position determination and tracking functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Dennis Patent to use a controller that activates and/or selects positioning techniques as described by the prior art from Appendix P, including, for example, U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,365,450 to Schuchman et al.; and U.S. Patent No. 5,519,760 to Borkowski et al. One of ordinary skill in the art would have been motivated to combine or modify the Dennis Patent in this manner because the Dennis Patent and the above-referenced prior art from Appendix P are all directed towards wireless location technology, and it would have been obvious to combine or modify the Dennis Patent to implement its position location functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the Dennis Patent, but would have modified the Dennis Patent with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

B. U.S. Patent No. 5,420,594 (FitzGerald et al.)

U.S. Patent No. 5,420,594 to FitzGerald et al., entitled “Multi-Mode Position Location Method,” issued May 30, 1995 (the “FitzGerald Patent”). The FitzGerald Patent is entitled to a priority date at least as early as October 21, 1993. The FitzGerald Patent qualifies as prior art under at least 35 U.S.C. §§ 102(a) and (b). The chart attached hereto as Exhibit 2 provides

examples of where the FitzGerald Patent discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the FitzGerald Patent does not anticipate the Asserted Claims, it would have been obvious to combine or modify the FitzGerald Patent with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the FitzGerald Patent to use other wireless location technologies, such as those described by the prior art from Appendices A, E, L, and N. More specifically, it would have been obvious to combine or modify the FitzGerald Patent to use the time of arrival or time difference of arrival location technologies described by the prior art from Appendix A, including, for example, U.S. Patent No. 5,327,144 to Stilp et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 6,748,226 to Wortham; and U.S. Patent No. 6,236,365 to LeBlanc et al. It would have also been obvious to combine or modify the FitzGerald Patent to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the FitzGerald Patent to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article¹⁸; the Maturino-Lozoya Article¹⁹;

¹⁸ H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

and the Junius Article²⁰. It would have also been obvious to combine or modify the FitzGerald Patent to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the FitzGerald Patent in this manner because the FitzGerald Patent and the above-referenced prior art from Appendices A, E, L, and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the FitzGerald Patent to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the FitzGerald Patent with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendices G, H, and I, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; U.S. Patent No. 5,412,388 to Attwood; U.S. Patent No. 5,602,903 to LeBlanc; U.S. Patent No. 5,936,572 to Loomis, et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi; U.S. Patent No. 5,438,517 to Sennett, et al.; U.S. Patent No. 5,334,974 to Simms et al.; U.S. Patent No. 5,428,546 to Shah et al.; E.P. Publication No. 0776485 B1 to Henderson; and the Mobile Information Systems Impact Study²¹. One of ordinary skill in the art would have been

¹⁹ H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

²⁰ Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

²¹ Jouko A. Parviainen, et al., "Mobile Information Systems Impact Study," Ontario Ministry of Transportation, August 1988.

motivated to combine or modify the FitzGerald Patent in this manner because the FitzGerald Patent and the above-referenced prior art from Appendices G, H, and I are all directed towards wireless location technology, and it would have been obvious to combine or modify the FitzGerald Patent to implement its data output functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the FitzGerald Patent to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,902,351 to Streit et al.; U.S. Patent No. 5,646,857 to McBurney et al.; U.S. Patent No. 5,488,559 to Seymour; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,602,903 to LeBlanc et al.; and U.S. Patent No. 5,604,765 to Bruno et al. One of ordinary skill in the art would have been motivated to combine or modify the FitzGerald Patent in this manner because the FitzGerald Patent and the above-referenced prior art from Appendix F are in the same technical field and all disclose location mapping and displaying functionality, and it would have been obvious to combine or modify the FitzGerald Patent to implement its mapping and displaying functionality using concepts from other prior art in the same field.

As another example, it would have been obvious to combine or modify the FitzGerald Patent to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; U.S. Patent No. 5,936,572 to Loomis; U.S.

Patent No. 5,999,126 to Ito; U.S. Patent No. 5,929,806 to Birchler; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,604,765 to Bruno; E.P. Patent No. 0762363A1 to Streit; WIPO Patent No. 95/14335 to Weinberg et al.; the Mobile Information Systems Impact Study²²; and the Rappaport Article²³. One of skill in the art would have been motivated to combine or modify the FitzGerald Patent in this manner because the FitzGerald Patent and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the FitzGerald Patent.

As another example, it would have been obvious to combine or modify the FitzGerald Patent to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,806,940 to Harral et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,936,572 to Loomis et al.; JP Patent Pub. No. 06-003431 to Yusuke et al.; and U.S. Patent No. 5,923,286 to Divakaruni. One of ordinary skill in the art would have been motivated to combine or modify the FitzGerald Patent in this manner because the FitzGerald Patent and the above-referenced prior art from Appendix D are all directed towards wireless location technology, and it would have been obvious to combine or modify the FitzGerald Patent to implement its accuracy and display functionality using concepts from prior art in the same field.

²² Jouko A. Parviainen, et al., "Mobile Information Systems Impact Study," Ontario Ministry of Transportation, August 1988.

²³ T.S. Rappaport, et al., "Position Location Using Wireless Communications on Highways of the Future," IEEE Communications Magazine, October 1996.

As another example, it would have been obvious to combine or modify the FitzGerald Patent to determine velocity, acceleration, and/or geographical features near a mobile unit as described by the prior art from Appendix O, including, for example, U.S. Patent No. 6,487,500 to Lemelson et al.; U.S. Patent No. 5,657,025 to Ebner et al.; U.S. Patent No. 5,512,903 to Schmidtke; U.S. Patent No. 5,490,073 to Kyrtos; U.S. Patent No. 5,119,101 to Barnard; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi et al.; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 4,402,049 to Gray; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,517419 to Lanckton et al.; U.S. Patent No. 5,452,211 to Kyrtos et al.; U.S. Patent No. 5,293,318 to Fukushima; U.S. Patent No. 5,276,451 to Odagawa; U.S. Patent No. 5,374,933 to Kao; and U.S. Patent No. 5,627,549 to Park. One of ordinary skill in the art would have been motivated to combine or modify the FitzGerald Patent in this manner because the FitzGerald Patent and the above-referenced prior art from Appendix O are all directed towards wireless location technology, and it would have been obvious to combine or modify the FitzGerald Patent to implement its position determination and tracking functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the FitzGerald Patent, but would have modified the FitzGerald Patent with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

C. U.S. Patent No. 5,552,772 (Janky et al.)

U.S. Patent No. 5,552,772 to Janky et al., entitled “Location of Emergency Service Workers,” issued September 3, 1996 (the “Janky Patent”). The Janky Patent is entitled to a priority date at least as early as December 20, 1993. The Janky Patent qualifies as prior art under at least 35 U.S.C. §§ 102(a) and (b). The chart attached hereto as Exhibit 3 provides examples of where the Janky Patent discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the Janky Patent does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Janky Patent with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Janky Patent to use other wireless location technologies, such as those described by the prior art from Appendices A, E, K, L, and N. More specifically, it would have been obvious to combine or modify the Janky Patent to use the time of arrival or time difference of arrival location technologies described by the prior art from Appendix A, including, for example, U.S. Patent No. 5,327,144 to Stilp et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 6,748,226 to Wortham; and U.S. Patent No. 6,236,365 to LeBlanc et al. It would have also been obvious to combine or modify the Janky Patent to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the Janky Patent to use the

differential GPS and/or assisted GPS technologies described by the prior art from Appendix K, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,365,450 to Schuchman et al.; and U.S. Patent No. 5,841,396 to Krasner. It would have also been obvious to combine or modify the Janky Patent to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article²⁴; the Maturino-Lozoya Article²⁵; and the Junius Article²⁶. It would have also been obvious to combine or modify the Janky Patent to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Janky Patent in this manner because the Janky Patent and the above-referenced prior art from Appendices A, E, K, L and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the Janky Patent to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Janky Patent to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al. and U.S. Patent No. 4,806,940 to Harral et al. One of ordinary skill in the art would have been

²⁴ H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

²⁵ H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

²⁶ Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

motivated to combine or modify the Janky Patent in this manner because the Janky Patent and the above-referenced prior art from Appendix D are all directed towards wireless location technology, and it would have been obvious to combine or modify the Janky Patent to implement its accuracy and display functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Janky Patent to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,902,351 to Streit et al.; U.S. Patent No. 5,646,857 to McBurney et al.; U.S. Patent No. 5,488,559 to Seymour; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,602,903 to LeBlanc et al.; and U.S. Patent No. 5,604,765 to Bruno et al. One of ordinary skill in the art would have been motivated to combine or modify the Janky Patent in this manner because the Janky Patent and the above-referenced prior art from Appendix F are in the same technical field and all disclose location mapping and displaying functionality, and it would have been obvious to combine or modify the Janky Patent to implement its mapping and displaying functionality using concepts from other prior art in the same field.

As another example, it would have been obvious to combine or modify the Janky Patent to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,602,903 to LeBlanc; U.S. Patent No. 5,717,737 to Doviak et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Janky Patent in this manner because the Janky Patent and the above-referenced prior art from Appendix B are all directed towards wireless location technology, and

it would have been obvious to combine or modify the Janky Patent to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Janky Patent to determine velocity, acceleration, and/or geographical features near a mobile unit as described by the prior art from Appendix O, including, for example, U.S. Patent No. 6,487,500 to Lemelson et al.; U.S. Patent No. 5,657,025 to Ebner et al.; U.S. Patent No. 5,512,903 to Schmidtke; U.S. Patent No. 5,490,073 to Kyrtos; U.S. Patent No. 5,119,101 to Barnard; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi et al.; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 4,402,049 to Gray; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,517419 to Lanckton et al.; U.S. Patent No. 5,452,211 to Kyrtos et al.; U.S. Patent No. 5,293,318 to Fukushima; U.S. Patent No. 5,276,451 to Odagawa; U.S. Patent No. 5,374,933 to Kao; and U.S. Patent No. 5,627,549 to Park. One of ordinary skill in the art would have been motivated to combine or modify the Janky Patent in this manner because the Janky Patent and the above-referenced prior art from Appendix O are all directed towards wireless location technology, and it would have been obvious to combine or modify the Janky Patent to implement its position determination and tracking functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the Janky Patent, but would have modified the Janky Patent with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and

common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

D. U.S. Patent No. 5,604,765 (Bruno et al.)

U.S. Patent No. 5,604,765 to Bruno et al., entitled “Position Enhanced Communication System Including System for Embedding CDMA Navigation Beacons Under the Communications Signals of a Wireless Communication System,” issued February 18, 1997 (the “Bruno Patent”). The Bruno Patent is entitled to a priority date at least as early as December 23, 1994. The Bruno Patent qualifies as prior art under at least 35 U.S.C. § 102(e). The chart attached hereto as Exhibit 4 provides examples of where the Bruno Patent discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the Bruno Patent does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Bruno Patent with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Bruno Patent to use other wireless location technologies, such as those described by the prior art from Appendices A, E, K, L, and N. More specifically, it would have been obvious to combine or modify the Bruno Patent to use the time of arrival or time difference of arrival location technologies described by the prior art from Appendix A, including, for example, U.S. Patent No. 5,327,144 to Stilp et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 6,748,226 to Wortham; and U.S. Patent No. 6,236,365 to LeBlanc et al. It would have also been obvious to combine or modify the Bruno Patent to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S.

Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the Bruno Patent to use the differential GPS and/or assisted GPS technologies described by the prior art from Appendix K, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,365,450 to Schuchman et al.; and U.S. Patent No. 5,841,396 to Krasner. It would have also been obvious to combine or modify the Bruno Patent to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article²⁷; the Maturino-Lozoya Article²⁸; and the Junius Article²⁹. It would have also been obvious to combine or modify the Bruno Patent to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Bruno Patent in this manner because the Bruno Patent and the above-referenced prior art from Appendices A, E, K, L and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the Bruno Patent to implement its location determining functionality using concepts from prior art in the same field.

²⁷ H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

²⁸ H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

²⁹ Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

As another example, it would have been obvious to combine or modify the Bruno Patent with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendices G, H, and I, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; and U.S. Patent No. 5,412,388 to Attwood. One of ordinary skill in the art would have been motivated to combine or modify the Bruno Patent in this manner because the Bruno Patent and the above-referenced prior art from Appendices G, H, and I are all directed towards wireless location technology, and it would have been obvious to combine or modify the Bruno Patent to implement its data output functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Bruno Patent to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al. and U.S. Patent No. 4,806,940 to Harral et al. One of ordinary skill in the art would have been motivated to combine or modify the Bruno Patent in this manner because the Bruno Patent and the above-referenced prior art from Appendix D are all directed towards wireless location technology, and it would have been obvious to combine or modify the Bruno Patent to implement its accuracy and display functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Bruno Patent to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,902,351 to Streit et al.; U.S. Patent No. 5,646,857 to McBurney et al.; U.S. Patent No. 5,488,559 to Seymour; U.S.

Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,740,049 to Kaise; and U.S. Patent No. 5,602,903 to LeBlanc et al. One of ordinary skill in the art would have been motivated to combine or modify the Bruno Patent in this manner because the Bruno Patent and the above-referenced prior art from Appendix F are in the same technical field and all disclose location mapping and displaying functionality, and it would have been obvious to combine or modify the Bruno Patent to implement its mapping and displaying functionality using concepts from other prior art in the same field.

As another example, it would have been obvious to combine or modify the Bruno Patent to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; the Mobile Information Systems Impact Study³⁰; and the Rappaport Article³¹. One of skill in the art would have been motivated to combine or modify the Bruno Patent in this manner because the Bruno Patent and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the Bruno Patent.

As another example, it would have been obvious to combine or modify the Bruno Patent to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,602,903 to LeBlanc; U.S. Patent No. 5,717,737 to Doviak et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the

³⁰ Jouko A. Parviainen, et al., “Mobile Information Systems Impact Study,” Ontario Ministry of Transportation, August 1988.

³¹ T.S. Rappaport, et al., “Position Location Using Wireless Communications on Highways of the Future,” IEEE Communications Magazine, October 1996.

Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Bruno Patent in this manner because the Bruno Patent and the above-referenced prior art from Appendix B are all directed towards wireless location technology, and it would have been obvious to combine or modify the Bruno Patent to implement its data communication functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the Bruno Patent, but would have modified the Bruno Patent with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

E. U.S. Patent No. 5,646,630 (Sheynblat et al.)

U.S. Patent No. 5,646,630 to Sheynblat et al., entitled "Network of Equivalent Ground Transmitters," issued July 8, 1997 (the "Sheynblat Patent"). The Sheynblat Patent is entitled to a priority date at least as early as May 20, 1996. The Sheynblat Patent qualifies as prior art under at least 35 U.S.C. § 102(e). The chart attached hereto as Exhibit 5 provides examples of where the Sheynblat Patent discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the Sheynblat Patent does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Sheynblat Patent with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Sheynblat Patent to use other wireless location technologies, such as those described by the prior art from Appendices L and N. More specifically, it would have been obvious to combine or modify the Sheynblat Patent to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article³²; the Maturino-Lozoya Article³³; and the Junius Article³⁴. It would have also been obvious to combine or modify the Sheynblat Patent to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Sheynblat Patent in this manner because the Sheynblat Patent and the above-referenced prior art from Appendices L and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the Sheynblat Patent to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Sheynblat Patent to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al. and U.S. Patent No. 4,806,940 to Harral et al. One of ordinary skill in the art would have been motivated to combine or modify the Sheynblat Patent in this manner because the Sheynblat

³² H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

³³ H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

³⁴ Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

Patent and the above-referenced prior art from Appendix D are all directed towards wireless location technology, and it would have been obvious to combine or modify the Sheynblat Patent to implement its accuracy and display functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Sheynblat Patent to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,602,903 to LeBlanc; U.S. Patent No. 5,717,737 to Doviak et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Sheynblat Patent in this manner because the Sheynblat Patent and the above-referenced prior art from Appendix B are all directed towards wireless location technology, and it would have been obvious to combine or modify the Sheynblat Patent to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Sheynblat Patent to use a controller that activates and/or selects positioning techniques as described by the prior art from Appendix P, including, for example, U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,365,450 to Schuchman et al.; and U.S. Patent No. 5,519,760 to Borkowski et al. One of ordinary skill in the art would have been motivated to combine or modify the Sheynblat Patent in this manner because the Sheynblat Patent and the above-referenced prior art from Appendix P are all directed towards wireless location

technology, and it would have been obvious to combine or modify the Sheynblat Patent to implement its position location functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the Sheynblat Patent, but would have modified the Sheynblat Patent with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

F. U.S. Patent No. 5,686,924 (Trimble et al.)

U.S. Patent No. 5,686,924 to Trimble et al., entitled “Local-Area Position Navigation System with Fixed Psuedolite Reference Transmitters,” issued November 11, 1997 (the “Trimble Patent”). The Trimble Patent is entitled to a priority date at least as early as May 30, 1995. The Trimble Patent qualifies as prior art under at least 35 U.S.C. § 102(e). The chart attached hereto as Exhibit 6 provides examples of where the Trimble Patent discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the Trimble Patent does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Trimble Patent with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Trimble Patent to use other wireless location technologies, such as those described by the prior art from Appendices E, L and N. More specifically, it would have been obvious to combine or modify the Trimble Patent to use the base station coverage location technologies described by the prior art from

Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the Trimble Patent to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article³⁵; the Maturino-Lozoya Article³⁶; and the Junius Article³⁷. It would have also been obvious to combine or modify the Trimble Patent to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Trimble Patent in this manner because the Trimble Patent and the above-referenced prior art from Appendices E, L, and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the Trimble Patent to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Trimble Patent with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendix I, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent

³⁵ H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

³⁶ H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

³⁷ Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; and U.S. Patent No. 5,412,388 to Attwood. One of ordinary skill in the art would have been motivated to combine or modify the Trimble Patent in this manner because the Trimble Patent and the above-referenced prior art from Appendix I are all directed towards wireless location technology, and it would have been obvious to combine or modify the Trimble Patent to implement its data output functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Trimble Patent to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al. and U.S. Patent No. 4,806,940 to Harral et al. One of ordinary skill in the art would have been motivated to combine or modify the Trimble Patent in this manner because the Trimble Patent and the above-referenced prior art from Appendix D are all directed towards wireless location technology, and it would have been obvious to combine or modify the Trimble Patent to implement its accuracy and display functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Trimble Patent to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,902,351 to Streit et al.; U.S. Patent No. 5,646,857 to McBurney et al.; U.S. Patent No. 5,488,559 to Seymour; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,602,903 to LeBlanc et al.; and U.S. Patent No. 5,604,765 to Bruno et al. One of ordinary skill in the art would have been motivated to combine or modify the Trimble Patent in this manner because the Trimble Patent and the above-referenced prior art from

Appendix F are in the same technical field and all disclose location mapping and displaying functionality, and it would have been obvious to combine or modify the Trimble Patent to implement its mapping and displaying functionality using concepts from other prior art in the same field.

As another example, it would have been obvious to combine or modify the Trimble Patent to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; the Mobile Information Systems Impact Study³⁸; and the Rappaport Article³⁹. One of skill in the art would have been motivated to combine or modify the Trimble Patent in this manner because the Trimble Patent and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the Trimble Patent.

As another example, it would have been obvious to combine or modify the Trimble Patent to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,602,903 to LeBlanc; U.S. Patent No. 5,717,737 to Doviak et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Trimble Patent in this manner because the Trimble Patent and the above-referenced prior art from Appendix B are all directed towards

³⁸ Jouko A. Parviainen, et al., "Mobile Information Systems Impact Study," Ontario Ministry of Transportation, August 1988.

³⁹ T.S. Rappaport, et al., "Position Location Using Wireless Communications on Highways of the Future," IEEE Communications Magazine, October 1996.

wireless location technology, and it would have been obvious to combine or modify the Trimble Patent to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Trimble Patent to use a mobile unit that is capable of two-way voice communication as described by the prior art from Appendix M, including, for example, U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,604,765 to Bruno et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 5,552,772 to Janky; U.S. Patent No. 5,646,630 to Sheynblat; and U.S. Patent No. 5,420,594 to FitzGerald. One of ordinary skill in the art would have been motivated to combine or modify the Trimble Patent in this manner because the Trimble Patent and the above-referenced prior art from Appendix M are all directed towards wireless location technology, and it would have been obvious to combine or modify the Trimble Patent to implement its communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Trimble Patent to determine velocity, acceleration, and/or geographical features near a mobile unit as described by the prior art from Appendix O, including, for example, U.S. Patent No. 6,487,500 to Lemelson et al.; U.S. Patent No. 5,657,025 to Ebner et al.; U.S. Patent No. 5,512,903 to Schmidtke; U.S. Patent No. 5,490,073 to Kyrtsov; U.S. Patent No. 5,119,101 to Barnard; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi et al.; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 4,402,049 to Gray; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,517419 to Lanckton et al.; U.S.

Patent No. 5,452,211 to Kyrtsov et al.; U.S. Patent No. 5,293,318 to Fukushima; U.S. Patent No. 5,276,451 to Odagawa; U.S. Patent No. 5,374,933 to Kao; and U.S. Patent No. 5,627,549 to Park. One of ordinary skill in the art would have been motivated to combine or modify the Trimble Patent in this manner because the Trimble Patent and the above-referenced prior art from Appendix O are all directed towards wireless location technology, and it would have been obvious to combine or modify the Trimble Patent to implement its position determination and tracking functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Trimble Patent to use a controller that activates and/or selects positioning techniques as described by the prior art from Appendix P, including, for example, U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,365,450 to Schuchman et al.; and U.S. Patent No. 5,519,760 to Borkowski et al. One of ordinary skill in the art would have been motivated to combine or modify the Trimble Patent in this manner because the Trimble Patent and the above-referenced prior art from Appendix P are all directed towards wireless location technology, and it would have been obvious to combine or modify the Trimble Patent to implement its position location functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the Trimble Patent, but would have modified the Trimble Patent with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

G. U.S. Patent No. 5,724,660 (Kauser et al.)

U.S. Patent No. 5,724,660 to Kauser et al., entitled “Method and Apparatus for Locating a Mobile Station by Comparing Calculated Location Area with GPS Coordinates,” issued March 3, 1998 (the “Kauser Patent”). The Kauser Patent is entitled to a priority date at least as early as June 7, 1995. The Kauser Patent qualifies as prior art under at least 35 U.S.C. § 102(e). The chart attached hereto as Exhibit 7 provides examples of where the Kauser Patent discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the Kauser Patent does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Kauser Patent with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Kauser Patent to use other wireless location technologies, such as those described by the prior art from Appendices A K, L, and N. More specifically, it would have been obvious to combine or modify the Kauser Patent to use the time of arrival or time difference of arrival location technologies described by the prior art from Appendix A, including, for example, U.S. Patent No. 5,327,144 to Stilp et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 6,748,226 to Wortham; and U.S. Patent No. 6,236,365 to LeBlanc et al. It would have also been obvious to combine or modify the Kauser Patent to use the differential GPS and/or assisted GPS technologies described by the prior art from Appendix K, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,365,450 to Schuchman et al.; and U.S. Patent No. 5,841,396 to Krasner. It would have also been obvious to combine or modify the Kauser Patent to use the signal pattern matching functionality described by the prior art from

Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article⁴⁰; the Maturino-Lozoya Article⁴¹; and the Junius Article⁴². It would have also been obvious to combine or modify the Kauser Patent to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Kauser Patent in this manner because the Kauser Patent and the above-referenced prior art from Appendices A, K, L, and N are all directed towards wireless location technology integrated with cellular communication networks, and additionally, the Kauser Patent explicitly teaches that location technologies other than those specifically described may be used.⁴³

As another example, it would have been obvious to combine or modify the Kauser Patent to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,602,903 to LeBlanc et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Kauser Patent in this manner because the Kauser Patent and the above-referenced prior art from Appendix B are all directed towards wireless location technology integrated with cellular communication networks, and it would have been

⁴⁰ H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

⁴¹ H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

⁴² Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

⁴³ See U.S. Patent No. 5,724,660 to Kauser et al., 12:46-48 ("For example, the present invention could be implemented using a geometric location technique other than that described herein.").

obvious to combine or modify the Kauser Patent to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Kauser Patent to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,806,940 to Harral et al.; U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,936,572 to Loomis et al.; JP Patent Pub. No. 06-003431 to Yusuke et al.; and U.S. Patent No. 5,923,286 to Divakaruni. It would have also been obvious to combine or modify the Kauser Patent to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,902,351 to Streit et al.; U.S. Patent No. 5,646,857 to McBurney et al.; U.S. Patent No. 5,488,559 to Seymour; U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,602,903 to LeBlanc et al.; and U.S. Patent No. 5,604,765 to Bruno et al. One of ordinary skill in the art would have been motivated to combine or modify the Kauser Patent in this manner because the Kauser Patent and the above-referenced prior art from Appendices D and F all disclose location mapping and displaying functionality, and it would have been obvious to combine or modify the Kauser Patent to implement its mapping and displaying functionality using concepts from other prior art in the same field.

As another example, it would have been obvious to combine or modify the Kauser Patent with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendices G, H, and I, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; and U.S. Patent No. 5,412,388 to Attwood. One of ordinary skill in the art would have been motivated to combine or modify the Kauser Patent in this manner because the Kauser Patent and the above-referenced prior art from Appendices G, H, and I are all directed towards wireless location technology, and it would have been obvious to combine or modify the Kauser Patent to implement its data output functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Kauser Patent to determine velocity, acceleration, and/or geographical features near a mobile unit as described by the prior art from Appendix O, including, for example, U.S. Patent No. 6,487,500 to Lemelson et al.; U.S. Patent No. 5,657,025 to Ebner et al.; U.S. Patent No. 5,512,903 to Schmidtke; U.S. Patent No. 5,490,073 to Kyrtsov; U.S. Patent No. 5,119,101 to Barnard; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi et al.; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 4,402,049 to Gray; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,517,419 to Lanckton et al.; U.S. Patent No. 5,452,211 to Kyrtsov et al.; U.S. Patent No. 5,293,318 to Fukushima; U.S. Patent No. 5,276,451 to Odagawa; U.S. Patent No. 5,374,933 to Kao; and U.S. Patent No. 5,627,549 to Park. One of ordinary skill in the art would have been motivated to combine or modify the

Kauser Patent in this manner because the Kauser Patent and the above-referenced prior art from Appendix O are all directed towards wireless location technology, and it would have been obvious to combine or modify the Kauser Patent to implement its position determination and tracking functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the Kauser Patent, but would have modified the Kauser Patent with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

H. U.S. Patent No. 5,774,829 (Cisneros et al.)

U.S. Patent No. 5,774,829 to Cisneros et al., entitled “Navigation and Positioning System and Method Using Uncoordinated Beacon Signals in Conjunction with an Absolute Positioning System,” issued June 30, 1998 (the “Cisneros Patent”). The Cisneros Patent is entitled to a priority date at least as early as December 12, 1995. The Cisneros Patent qualifies as prior art under at least 35 U.S.C. § 102(e). The chart attached hereto as Exhibit 8 provides examples of where the Cisneros Patent discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the Cisneros Patent does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Cisneros Patent with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Cisneros Patent to use other wireless location technologies, such as those described by the prior art from Appendices A, E, L, and N. More specifically, it would have been obvious to combine or modify the Cisneros Patent to use the time of arrival or time difference of arrival location technologies described by the prior art from Appendix A, including, for example, U.S. Patent No. 5,327,144 to Stilp et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 6,748,226 to Wortham; and U.S. Patent No. 6,236,365 to LeBlanc et al. It would have also been obvious to combine or modify the Cisneros Patent to use the base station coverage location technologies described by the prior art from Appendix E, including U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the Cisneros Patent to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article⁴⁴; the Maturino-Lozoya Article⁴⁵; and the Junius Article⁴⁶. It would have also been obvious to combine or modify the Cisneros Patent to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Cisneros Patent in this manner because the Cisneros Patent and the above-referenced

⁴⁴ H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

⁴⁵ H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

⁴⁶ Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

prior art from Appendices A, E, L, and N are all directed towards wireless location technology integrated with wireless communication networks.

As another example, it would have been obvious to combine or modify the Cisneros Patent to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; the Mobile Information Systems Impact Study⁴⁷; and the Rappaport Article⁴⁸. One of skill in the art would have been motivated to combine or modify the Cisneros Patent in this manner because the Cisneros Patent and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the Cisneros Patent.

As another example, it would have been obvious to combine or modify the Cisneros Patent to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,602,903 to LeBlanc et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Cisneros Patent in this manner because the Cisneros Patent and the above-referenced prior art from Appendix B are all directed towards wireless location technology integrated with cellular communication networks, and it would have been obvious to combine or modify the Cisneros Patent to implement its data communication functionality using concepts from prior art in the same field.

⁴⁷ Jouko A. Parviainen, et al., "Mobile Information Systems Impact Study," Ontario Ministry of Transportation, August 1988.

⁴⁸ T.S. Rappaport, et al., "Position Location Using Wireless Communications on Highways of the Future," IEEE Communications Magazine, October 1996.

As another example, it would have been obvious to combine or modify the Cisneros Patent to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al. and U.S. Patent No. 4,806,940 to Harral et al. It would have also been obvious to combine or modify the Cisneros Patent to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao and U.S. Patent No. 5,902,351 to Streit et al. One of ordinary skill in the art would have been motivated to combine or modify the Cisneros Patent in this manner because the Cisneros Patent and the above-referenced prior art from Appendices D and F all disclose mapping and displaying locations, and it would have been obvious to combine or modify the Cisneros Patent to implement its mapping and display functionality using concepts from other prior art in the same field.

As another example, it would have been obvious to combine or modify the Cisneros Patent with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendices G, H, and I, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,724,660 to Kauser et al; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; and U.S. Patent No. 5,412,388 to Attwood. One of ordinary skill in the art would have been motivated to combine or modify the Cisneros Patent in this manner because the Cisneros Patent and the above-referenced prior art from Appendices G, H, and I are all directed towards wireless location technology, and it would have been obvious to combine or modify the Cisneros Patent to implement its data output functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the Cisneros Patent, but would have modified the Cisneros Patent with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

I. U.S. Patent No. 5,936,572 (Loomis et al.)

U.S. Patent No. 5,936,572 to Loomis et al., entitled “Portable Hybrid Location Determination System,” issued August 10, 1999 (the “Loomis Patent”). The Loomis Patent is entitled to a priority date at least as early as February 4, 1994. The Loomis Patent qualifies as prior art under at least 35 U.S.C. § 102(e). The chart attached hereto as Exhibit 9 provides examples of where the Loomis Patent discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the Loomis Patent does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Loomis Patent with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Loomis Patent to use other wireless location technologies, such as those described by the prior art from Appendices E, L, and N. More specifically, it would have been obvious to combine or modify the Loomis Patent to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to

Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the Loomis Patent to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article⁴⁹; the Maturino-Lozoya Article⁵⁰; and the Junius Article⁵¹. It would have also been obvious to combine or modify the Loomis Patent to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Loomis Patent in this manner because the Loomis Patent and the above-referenced prior art from Appendices E, L, and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the Loomis Patent to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Loomis Patent with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendices G, H, and I, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; and U.S. Patent No. 5,412,388 to Attwood. One of ordinary skill in the art would have been motivated to combine or modify

⁴⁹ H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

⁵⁰ H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

⁵¹ Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

the Loomis Patent in this manner because the Loomis Patent and the above-referenced prior art from Appendices G, H, and I are all directed towards wireless location technology, and it would have been obvious to combine or modify the Loomis Patent to implement its data output functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Loomis Patent to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,902,351 to Streit et al.; U.S. Patent No. 5,646,857 to McBurney et al.; U.S. Patent No. 5,488,559 to Seymour; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,602,903 to LeBlanc et al.; and U.S. Patent No. 5,604,765 to Bruno et al. One of ordinary skill in the art would have been motivated to combine or modify the Loomis Patent in this manner because the Loomis Patent and the above-referenced prior art from Appendix F are in the same technical field and all disclose location mapping and displaying functionality, and it would have been obvious to combine or modify the Loomis Patent to implement its mapping and displaying functionality using concepts from other prior art in the same field.

As another example, it would have been obvious to combine or modify the Loomis Patent to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; the Mobile Information Systems Impact Study⁵²; and the

⁵² Jouko A. Parviainen, et al., "Mobile Information Systems Impact Study," Ontario Ministry of Transportation, August 1988.

Rappaport Article⁵³. One of skill in the art would have been motivated to combine or modify the Loomis Patent in this manner because the Loomis Patent and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the Loomis Patent.

As another example, it would have been obvious to combine or modify the Loomis Patent to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,602,903 to LeBlanc; U.S. Patent No. 5,717,737 to Doviak et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Loomis Patent in this manner because the Loomis Patent and the above-referenced prior art from Appendix B are all directed towards wireless location technology, and it would have been obvious to combine or modify the Loomis Patent to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Loomis Patent to use a mobile unit that is capable of two-way voice communication as described by the prior art from Appendix M, including, for example, U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,604,765 to Bruno et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,552,772 to Janky; U.S. Patent No. 5,646,630 to Sheynblat; and U.S. Patent No. 5,420,594 to FitzGerald. One of ordinary skill in the art would have been motivated to combine or modify the Loomis Patent in this manner because the Loomis Patent and the above-referenced prior art from Appendix M are all directed towards wireless location technology, and it would have been obvious to combine or

⁵³ T.S. Rappaport, et al., "Position Location Using Wireless Communications on Highways of the Future," IEEE Communications Magazine, October 1996.

modify the Loomis Patent to implement its communication functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the Loomis Patent, but would have modified the Loomis Patent with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

J. U.S. Patent No. 5,999,126 (Ito et al.)

U.S. Patent No. 5,999,126 to Ito et al., entitled “Position Measuring Apparatus, Position Measuring Method, Navigation Apparatus, Navigation Method, Information Service Method, Automotive Vehicle, and Audio Information Transmitting and Receiving Method,” issued December 7, 1999 (the “Ito Patent”). The Ito Patent is entitled to a priority date at least as early as August 6, 1996. The Ito Patent qualifies as prior art under at least 35 U.S.C. § 102(e). The chart attached hereto as Exhibit 10 provides examples of where the Ito Patent discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the Ito Patent does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Ito Patent with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Ito Patent to use other wireless location technologies, such as those described by the prior art from Appendices A, K, L, and N. More specifically, it would have been obvious to combine or modify the Ito Patent to use

the time of arrival or time difference of arrival location technologies described by the prior art from Appendix A, including, for example, U.S. Patent No. 5,327,144 to Stilp et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 6,748,226 to Wortham; U.S. Patent No. 6,236,365 to LeBlanc et al.; U.S. Patent No. 5,510,801 to Engelbrecht et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; PCT Publication No. WO 97/23785 to Drane et al.; the Driscoll Survey⁵⁴; and the van Graas Report⁵⁵. It would have also been obvious to combine or modify the Ito Patent to use the differential GPS and/or assisted GPS technologies described by the prior art from Appendix K, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,365,450 to Schuchman et al.; U.S. Patent No. 5,841,396 to Krasner; U.S. Patent No. 6,208,290 to Krasner; U.S. Patent No. 4,445,118 to Taylor et al.; the DiEspositi Article⁵⁶; and the Wilson Article⁵⁷. It would have also been obvious to combine or modify the Ito Patent to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article⁵⁸; the Maturino-Lozoya Article⁵⁹; and the Junius Article⁶⁰. It would have also been obvious to combine or modify the Ito Patent to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for

⁵⁴ C.J. Driscoll & Associates, “Survey of Location Technologies to Support Mobile 9-1-1,” July 1994.

⁵⁵ Dr. Frank van Graas, et al., “Multisensor Signal Processing Techniques (Hybrid GPS/LORAN-C with RAIM),” U.S. Dept. of Transportation and Federal Aviation Administration, September 1991.

⁵⁶ Raymond DiEspositi, et al., “Benefits and Issues on the Integration of GPS with a Wireless Communications Link,” 29th Annual Precise Time and Time Interval (PTTI) Meeting, December 1997.

⁵⁷ Thomas C. Wilson, Jr., et al., “A Lagrangian Drifter with Inexpensive Wide Area Differential GPS Positioning,” Oceans 96 MTS/IEEE Conference Proceedings, September 1996.

⁵⁸ H. Stewart Cobb, et al., “Precision Landing Tests with Improved Integrity Beacon Pseudolites,” Presented at ION GPS-95, September 1995.

⁵⁹ H. Maturino-Lozoya, et al., “Pattern Recognition Techniques in Handoff and Service Area Determination,” IEEE Vehicular Technology Conference, June 1994.

⁶⁰ Martin Junius, et al., “New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management,” IEEE Vehicular Technology Conference, June 1994.

example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Ito Patent in this manner because the Ito Patent and the above-referenced prior art from Appendices A, K, L, and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the Ito Patent to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Ito Patent with functionality for outputting a determined location according to certain criteria, as described by the prior art from Appendices G, H, and I, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,724,660 to Kauser et al; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,689,270 to Kelley; U.S. Patent No. 5,412,388 to Attwood; U.S. Patent No. 5,602,903 to LeBlanc; U.S. Patent No. 5,936,572 to Loomis, et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi; U.S. Patent No. 5,438,517 to Sennett, et al.; U.S. Patent No. 5,334,974 to Simms et al.; U.S. Patent No. 5,428,546 to Shah et al; E.P. Publication No. 0776485 B1 to Henderson; and the Mobile Information Systems Impact Study⁶¹. One of ordinary skill in the art would have been motivated to combine or modify the Ito Patent in this manner because the Ito Patent and the above-referenced prior art from Appendices G, H, and I are all directed towards wireless location technology, and it would have been obvious to combine or modify the Ito Patent to implement its data output functionality using concepts from prior art in the same field.

⁶¹ Jouko A. Parviainen, et al., "Mobile Information Systems Impact Study," Ontario Ministry of Transportation, August 1988.

As another example, it would have been obvious to combine or modify the Ito Patent to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,602,903 to LeBlanc et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Ito Patent in this manner because the Ito Patent and the above-referenced prior art from Appendix B are all directed towards wireless location technology integrated with cellular communication networks, and it would have been obvious to combine or modify the Ito Patent to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Ito Patent to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; U.S. Patent No. 5,334,974 to Simms et al.; U.S. Patent No. 5,936,572 to Loomis; U.S. Patent No. 5,929,806 to Birchler; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,604,765 to Bruno; E.P. Patent No. 0762363A1 to Streit; WIPO Publication No. 95/14335 to Weinberg et al.; the Mobile Information Systems Impact Study⁶²; and the Rappaport Article⁶³. One of skill in the art would have been motivated to combine or modify the Ito Patent in this manner because the Ito Patent and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the Ito Patent.

⁶² Jouko A. Parviainen, et al., "Mobile Information Systems Impact Study," Ontario Ministry of Transportation, August 1988.

⁶³ T.S. Rappaport, et al., "Position Location Using Wireless Communications on Highways of the Future," IEEE Communications Magazine, October 1996.

As another example, it would have been obvious to combine or modify the Ito Patent to determine velocity, acceleration, and/or geographical features near a mobile unit as described by the prior art from Appendix O, including, for example, U.S. Patent No. 6,487,500 to Lemelson et al.; U.S. Patent No. 5,657,025 to Ebner et al.; U.S. Patent No. 5,512,903 to Schmidtke; U.S. Patent No. 5,490,073 to Kyrtos; U.S. Patent No. 5,119,101 to Barnard; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi et al.; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 4,402,049 to Gray; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,517419 to Lanckton et al.; U.S. Patent No. 5,452,211 to Kyrtos et al.; U.S. Patent No. 5,293,318 to Fukushima; U.S. Patent No. 5,276,451 to Odagawa; U.S. Patent No. 5,374,933 to Kao; and U.S. Patent No. 5,627,549 to Park. One of ordinary skill in the art would have been motivated to combine or modify the Ito Patent in this manner because the Ito Patent and the above-referenced prior art from Appendix O are all directed towards wireless location technology, and it would have been obvious to combine or modify the Ito Patent to implement its position determination and tracking functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the Ito Patent, but would have modified the Ito Patent with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

K. U.S. Patent No. 6,999,779 (Hashimoto et al.)

U.S. Patent No. 6,999,779 to Hashimoto et al., entitled “Position Information Management System,” issued February 14, 2006 (the “Hashimoto Patent”). The Hashimoto Patent is entitled to a priority date at least as early as February 6, 1997. The Hashimoto Patent qualifies as prior art under at least 35 U.S.C. § 102(e). The chart attached hereto as Exhibit 11 provides examples of where the Hashimoto Patent discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the Hashimoto Patent does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Hashimoto Patent with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Hashimoto Patent to use other wireless location technologies, such as those described by the prior art from Appendices A, L, and N. More specifically, it would have been obvious to combine or modify the Hashimoto Patent to use the time of arrival or time difference of arrival location technologies described by the prior art from Appendix A, including, for example, U.S. Patent No. 5,327,144 to Stilp et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 6,748,226 to Wortham; U.S. Patent No. 6,236,365 to LeBlanc et al.; U.S. Patent No. 5,510,801 to Engelbrecht et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; PCT Publication No. WO 97/23785 to Drane et al.; the Driscoll Survey⁶⁴; and the van Graas Report⁶⁵. It would have also been obvious to

⁶⁴ C.J. Driscoll & Associates, “Survey of Location Technologies to Support Mobile 9-1-1,” July 1994.

⁶⁵ Dr. Frank van Graas, et al., “Multisensor Signal Processing Techniques (Hybrid GPS/LORAN-C with RAIM),” U.S. Dept. of Transportation and Federal Aviation Administration, September 1991.

combine or modify the Hashimoto Patent to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article⁶⁶; the Maturino-Lozoya Article⁶⁷; and the Junius Article⁶⁸. It would have also been obvious to combine or modify the Hashimoto Patent to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Hashimoto Patent in this manner because the Hashimoto Patent and the above-referenced prior art from Appendices A, L, and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the Hashimoto Patent to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Hashimoto Patent with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendices G, H, and I, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; U.S. Patent No. 5,412,388 to Attwood; U.S. Patent No. 5,602,903 to LeBlanc; U.S. Patent No. 5,936,572 to Loomis, et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi;

⁶⁶ H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

⁶⁷ H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

⁶⁸ Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

U.S. Patent No. 5,438,517 to Sennett, et al.; U.S. Patent No. 5,334,974 to Simms et al.; U.S. Patent No. 5,428,546 to Shah et al; E.P. Publication No. 0776485 B1 to Henderson; and the Mobile Information Systems Impact Study⁶⁹. One of ordinary skill in the art would have been motivated to combine or modify the Hashimoto Patent in this manner because the Hashimoto Patent and the above-referenced prior art from Appendices G, H, and I are all directed towards wireless location technology, and it would have been obvious to combine or modify the Hashimoto Patent to implement its data output functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Hashimoto Patent to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,902,351 to Streit et al; U.S. Patent No. 5,646,857 to McBurney et al.; U.S. Patent No. 5,488,559 to Seymour; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,602,903 to LeBlanc et al.; and U.S. Patent No. 5,604,765 to Bruno et al. One of ordinary skill in the art would have been motivated to combine or modify the Hashimoto Patent in this manner because the Hashimoto Patent and the above-referenced prior art from Appendix F are in the same technical field and all disclose location mapping and displaying functionality, and it would have been obvious to combine or modify the Hashimoto Patent to implement its mapping and displaying functionality using concepts from other prior art in the same field.

⁶⁹ Jouko A. Parviainen, et al., "Mobile Information Systems Impact Study," Ontario Ministry of Transportation, August 1988.

As another example, it would have been obvious to combine or modify the Hashimoto Patent to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,806,940 to Harral et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,936,572 to Loomis et al.; JP Patent Pub. No. 06-003431 to Yusuke et al.; and U.S. Patent No. 5,923,286 to Divakaruni. One of ordinary skill in the art would have been motivated to combine or modify the Hashimoto Patent in this manner because the Hashimoto Patent and the above-referenced prior art from Appendix D are all directed towards wireless location technology, and it would have been obvious to combine or modify the Hashimoto Patent to implement its accuracy and display functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Hashimoto Patent to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,602,903 to LeBlanc; U.S. Patent No. 5,717,737 to Doviak et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Hashimoto Patent in this manner because the Hashimoto Patent and the above-referenced prior art from Appendix B are all directed towards wireless location technology, and it would have been obvious to combine or modify the Hashimoto Patent to implement its data communication functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the Hashimoto Patent, but would have modified the Hashimoto Patent with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

L. European Patent No. 0 346 461 B1 (Sagey)

European Patent No. 0 346 461 B1 to Sagey, entitled “Vehicle Location System Accuracy Enhancement for Airborne Vehicles,” issued August 25, 1993 (the “Sagey Patent”). The Sagey Patent qualifies as prior art under at least 35 U.S.C. §§ 102(a) and (b). The chart attached hereto as Exhibit 12 provides examples of where the Sagey Patent discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the Sagey Patent does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Sagey Patent with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Sagey Patent to use other wireless location technologies, such as those described by the prior art from Appendices A, E, L, and N. More specifically, it would have been obvious to combine or modify the Sagey Patent to use the time of arrival or time difference of arrival location technologies described by the prior art from Appendix A, including, for example, U.S. Patent No. 5,327,144 to Stilp et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 6,748,226 to Wortham; and U.S. Patent No. 6,236,365 to LeBlanc et al. It would have also been obvious to combine or modify

the Sagey Patent to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the Sagey Patent to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article⁷⁰; the Maturino-Lozoya Article⁷¹; and the Junius Article⁷². It would have also been obvious to combine or modify the Sagey Patent to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Sagey Patent in this manner because the Sagey Patent and the above-referenced prior art from Appendices A, E, L, and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the Sagey Patent to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Sagey Patent with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendix H, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer;

⁷⁰ H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

⁷¹ H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

⁷² Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

U.S. Patent No. 5,724,660 to Kauser et al; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; and U.S. Patent No. 5,412,388 to Attwood. One of ordinary skill in the art would have been motivated to combine or modify the Sagey Patent in this manner because the Sagey Patent and the above-referenced prior art from Appendix H are all directed towards wireless location technology, and it would have been obvious to combine or modify the Sagey Patent to implement its data output functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Sagey Patent to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al. and U.S. Patent No. 4,806,940 to Harral et al. One of ordinary skill in the art would have been motivated to combine or modify the Sagey Patent in this manner because the Sagey Patent and the above-referenced prior art from Appendix D are all directed towards wireless location technology, and it would have been obvious to combine or modify the Sagey Patent to implement its accuracy and display functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Sagey Patent to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,902,351 to Streit et al; U.S. Patent No. 5,646,857 to McBurney et al.; U.S. Patent No. 5,488,559 to Seymour; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,602,903 to LeBlanc et al.; and U.S. Patent No. 5,604,765 to Bruno et al. One of ordinary skill in the art would have been motivated to combine or modify the Sagey

Patent in this manner because the Sagey Patent and the above-referenced prior art from Appendix F are in the same technical field and all disclose location mapping and displaying functionality, and it would have been obvious to combine or modify the Sagey Patent to implement its mapping and displaying functionality using concepts from other prior art in the same field.

As another example, it would have been obvious to combine or modify the Sagey Patent to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; the Mobile Information Systems Impact Study⁷³; and the Rappaport Article⁷⁴. One of skill in the art would have been motivated to combine or modify the Sagey Patent in this manner because the Sagey Patent and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the Sagey Patent.

As another example, it would have been obvious to combine or modify the Sagey Patent to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,602,903 to LeBlanc; U.S. Patent No. 5,717,737 to Doviak et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Sagey Patent in this manner because the Sagey Patent and the above-referenced prior art from Appendix B are all directed towards wireless location technology, and

⁷³ Jouko A. Parviainen, et al., "Mobile Information Systems Impact Study," Ontario Ministry of Transportation, August 1988.

⁷⁴ T.S. Rappaport, et al., "Position Location Using Wireless Communications on Highways of the Future," IEEE Communications Magazine, October 1996.

it would have been obvious to combine or modify the Sagey Patent to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Sagey Patent to use a mobile unit that is capable of two-way voice communication as described by the prior art from Appendix M, including, for example, U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,604,765 to Bruno et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 5,552,772 to Janky; U.S. Patent No. 5,646,630 to Sheynblat; and U.S. Patent No. 5,420,594 to FitzGerald. One of ordinary skill in the art would have been motivated to combine or modify the Sagey Patent in this manner because the Sagey Patent and the above-referenced prior art from Appendix M are all directed towards wireless location technology, and it would have been obvious to combine or modify the Sagey Patent to implement its communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Sagey Patent to determine velocity, acceleration, and/or geographical features near a mobile unit as described by the prior art from Appendix O, including, for example, U.S. Patent No. 6,487,500 to Lemelson et al.; U.S. Patent No. 5,657,025 to Ebner et al.; U.S. Patent No. 5,512,903 to Schmidtke; U.S. Patent No. 5,490,073 to Kyrtos; U.S. Patent No. 5,119,101 to Barnard; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi et al.; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 4,402,049 to Gray; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,517419 to Lanckton et al.; U.S. Patent No. 5,452,211 to Kyrtos et al.; U.S. Patent No. 5,293,318 to Fukushima; U.S. Patent No.

5,276,451 to Odagawa; U.S. Patent No. 5,374,933 to Kao; and U.S. Patent No. 5,627,549 to Park. One of ordinary skill in the art would have been motivated to combine or modify the Sagey Patent in this manner because the Sagey Patent and the above-referenced prior art from Appendix O are all directed towards wireless location technology, and it would have been obvious to combine or modify the Sagey Patent to implement its position determination and tracking functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Sagey Patent to use a controller that activates and/or selects positioning techniques as described by the prior art from Appendix P, including, for example, U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,365,450 to Schuchman et al.; and U.S. Patent No. 5,519,760 to Borkowski et al. One of ordinary skill in the art would have been motivated to combine or modify the Sagey Patent in this manner because the Sagey Patent and the above-referenced prior art from Appendix P are all directed towards wireless location technology, and it would have been obvious to combine or modify the Sagey Patent to implement its position location functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the Sagey Patent, but would have modified the Sagey Patent with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

M. European Patent No. 0 592 560 B1 (Lans)

European Patent No. 0 592 560 B1 to Lans, entitled “A Position Indicating System,” was published April 20, 1994 and issued August 27, 1997 (the “Lans Patent”). The Lans Patent qualifies as prior art under at least 35 U.S.C. §§ 102(a) and (b). The chart attached hereto as Exhibit 13 provides examples of where the Lans Patent discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the Lans Patent does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Lans Patent with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Lans Patent to use other wireless location technologies, such as those described by the prior art from Appendices A, E, L, and N. More specifically, it would have been obvious to combine or modify the Lans Patent to use the time of arrival or time difference of arrival location technologies described by the prior art from Appendix A, including, for example, U.S. Patent No. 5,327,144 to Stilp et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 6,748,226 to Wortham; and U.S. Patent No. 6,236,365 to LeBlanc et al. It would have also been obvious to combine or modify the Lans Patent to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the Lans Patent to use the signal pattern matching functionality described by the prior art from Appendix L, including, for

example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article⁷⁵; the Maturino-Lozoya Article⁷⁶; and the Junius Article⁷⁷. It would have also been obvious to combine or modify the Lans Patent to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Lans Patent in this manner because the Lans Patent and the above-referenced prior art from Appendices A, E, L, and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the Lans Patent to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Lans Patent to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,602,903 to LeBlanc; U.S. Patent No. 5,717,737 to Doviak et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Lans Patent in this manner because the Lans Patent and the above-referenced prior art from Appendix B are all directed towards wireless location technology, and it would have been obvious to combine or modify the Lans Patent to implement its data communication functionality using concepts from prior art in the same field.

⁷⁵ H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

⁷⁶ H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

⁷⁷ Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

As another example, it would have been obvious to combine or modify the Lans Patent to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al. and U.S. Patent No. 4,806,940 to Harral et al. One of ordinary skill in the art would have been motivated to combine or modify the Lans Patent in this manner because the Lans Patent and the above-referenced prior art from Appendix D are all directed towards wireless location technology, and it would have been obvious to combine or modify the Lans Patent to implement its accuracy and display functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Lans Patent to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,902,351 to Streit et al.; U.S. Patent No. 5,646,857 to McBurney et al.; U.S. Patent No. 5,488,559 to Seymour; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,602,903 to LeBlanc et al.; and U.S. Patent No. 5,604,765 to Bruno et al. One of ordinary skill in the art would have been motivated to combine or modify the Lans Patent in this manner because the Lans Patent and the above-referenced prior art from Appendix F are in the same technical field and all disclose location mapping and displaying functionality, and it would have been obvious to combine or modify the Lans Patent to implement its mapping and displaying functionality using concepts from other prior art in the same field.

As another example, it would have been obvious to combine or modify the Lans Patent with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendices G, H, and I, including, for example, U.S. Patent No. 5,546,092

to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; and U.S. Patent No. 5,412,388 to Attwood. One of ordinary skill in the art would have been motivated to combine or modify the Lans Patent in this manner because the Lans Patent and the above-referenced prior art from Appendices G, H, and I are all directed towards wireless location technology, and it would have been obvious to combine or modify the Lans Patent to implement its data output functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Lans Patent to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; the Mobile Information Systems Impact Study⁷⁸; and the Rappaport Article⁷⁹. One of skill in the art would have been motivated to combine or modify the Lans Patent in this manner because the Lans Patent and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the Lans Patent.

As another example, it would have been obvious to combine or modify the Lans Patent to use a mobile unit that is capable of two-way voice communication as described by the prior art from Appendix M, including, for example, U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,604,765 to Bruno et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829

⁷⁸ Jouko A. Parviainen, et al., "Mobile Information Systems Impact Study," Ontario Ministry of Transportation, August 1988.

⁷⁹ T.S. Rappaport, et al., "Position Location Using Wireless Communications on Highways of the Future," IEEE Communications Magazine, October 1996.

to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 5,552,772 to Janky; U.S. Patent No. 5,646,630 to Sheynblat; and U.S. Patent No. 5,420,594 to FitzGerald. One of ordinary skill in the art would have been motivated to combine or modify the Lans Patent in this manner because the Lans Patent and the above-referenced prior art from Appendix M are all directed towards wireless location technology, and it would have been obvious to combine or modify the Lans Patent to implement its communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Lans Patent to determine velocity, acceleration, and/or geographical features near a mobile unit as described by the prior art from Appendix O, including, for example, U.S. Patent No. 6,487,500 to Lemelson et al.; U.S. Patent No. 5,657,025 to Ebner et al.; U.S. Patent No. 5,512,903 to Schmidtke; U.S. Patent No. 5,490,073 to Kyrtsov; U.S. Patent No. 5,119,101 to Barnard; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi et al.; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 4,402,049 to Gray; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,517419 to Lanckton et al.; U.S. Patent No. 5,452,211 to Kyrtsov et al.; U.S. Patent No. 5,293,318 to Fukushima; U.S. Patent No. 5,276,451 to Odagawa; U.S. Patent No. 5,374,933 to Kao; and U.S. Patent No. 5,627,549 to Park. One of ordinary skill in the art would have been motivated to combine or modify the Lans Patent in this manner because the Lans Patent and the above-referenced prior art from Appendix O are all directed towards wireless location technology, and it would have been obvious to combine or modify the Lans Patent to implement its position determination and tracking functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Lans Patent to use a controller that activates and/or selects positioning techniques as described by the prior art from Appendix P, including, for example, U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,365,450 to Schuchman et al.; and U.S. Patent No. 5,519,760 to Borkowski et al. One of ordinary skill in the art would have been motivated to combine or modify the Lans Patent in this manner because the Lans Patent and the above-referenced prior art from Appendix P are all directed towards wireless location technology, and it would have been obvious to combine or modify the Lans Patent to implement its position location functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the Lans Patent, but would have modified the Lans Patent with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

N. International PCT Application No. PCT/US95/02244 (Engelbrecht et al.)

International PCT Application No. PCT/US95/02244 to Engelbrecht et al., entitled “A Location Determination System and Method Using Television Broadcast Signals,” was published September 8, 1995 (the “Engelbrecht Application”). The Engelbrecht Application is entitled to a priority date at least as early as March 1, 1994, which is the filing date of U.S. Patent No. 5,510,801 (the “Engelbrecht Patent”) to which the Engelbrecht Application claims priority.⁸⁰

⁸⁰ The Engelbrecht Patent, which issued on April 23, 1996, separately qualifies as prior art under at least 35 U.S.C. §§ 102(a) and (b). In addition, because the Engelbrecht Patent contains the same disclosure as the Engelbrecht

The Engelbrecht Application qualifies as prior art under at least 35 U.S.C. §§ 102(a) and (b).

The chart attached hereto as Exhibit 14 provides examples of where the Engelbrecht Application discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the Engelbrecht Application does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Engelbrecht Application with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Engelbrecht Application to use other wireless location technologies, such as those described by the prior art from Appendices A, E, K, L, and N. More specifically, it would have been obvious to combine or modify the Engelbrecht Application to use the time of arrival or time difference of arrival location technologies described by the prior art from Appendix A, including, for example, U.S. Patent No. 5,327,144 to Stilp et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 6,748,226 to Wortham; and U.S. Patent No. 6,236,365 to LeBlanc et al. It would have also been obvious to combine or modify the Engelbrecht Application to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the Engelbrecht Application to use the differential GPS and/or assisted GPS

Application, the exemplary disclosures in Exhibit 14 from the Engelbrecht Application are also representative of the disclosures from the Engelbrecht Patent.

technologies described by the prior art from Appendix K, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,365,450 to Schuchman et al.; and U.S. Patent No. 5,841,396 to Krasner. It would have also been obvious to combine or modify the Engelbrecht Application to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article⁸¹; the Maturino-Lozoya Article⁸²; and the Junius Article⁸³. It would have also been obvious to combine or modify the Engelbrecht Application to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Engelbrecht Application in this manner because the Engelbrecht Application and the above-referenced prior art from Appendices A, E, K, L and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the Engelbrecht Application to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Engelbrecht Application with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendices G, H, and I, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No.

⁸¹ H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

⁸² H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

⁸³ Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

5,510,798 to Bauer; U.S. Patent No. 5,724,660 to Kauser et al; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; and U.S. Patent No. 5,412,388 to Attwood. One of ordinary skill in the art would have been motivated to combine or modify the Engelbrecht Application in this manner because the Engelbrecht Application and the above-referenced prior art from Appendices G, H, and I are all directed towards wireless location technology, and it would have been obvious to combine or modify the Engelbrecht Application to implement its data output functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Engelbrecht Application to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al. and U.S. Patent No. 4,806,940 to Harral et al. One of ordinary skill in the art would have been motivated to combine or modify the Engelbrecht Application in this manner because the Engelbrecht Application and the above-referenced prior art from Appendix D are all directed towards wireless location technology, and it would have been obvious to combine or modify the Engelbrecht Application to implement its accuracy and display functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Engelbrecht Application to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,902,351 to Streit et al; U.S. Patent No. 5,646,857 to McBurney et al.; U.S. Patent No. 5,488,559 to Seymour; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 5,552,772 to Janky et

al.; U.S. Patent No. 5,740,049 to Kaise; and U.S. Patent No. 5,602,903 to LeBlanc et al. One of ordinary skill in the art would have been motivated to combine or modify the Engelbrecht Application in this manner because the Engelbrecht Application and the above-referenced prior art from Appendix F are in the same technical field and all disclose location mapping and displaying functionality, and it would have been obvious to combine or modify the Engelbrecht Application to implement its mapping and displaying functionality using concepts from other prior art in the same field.

As another example, it would have been obvious to combine or modify the Engelbrecht Application to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; the Mobile Information Systems Impact Study⁸⁴; and the Rappaport Article⁸⁵. One of skill in the art would have been motivated to combine or modify the Engelbrecht Application in this manner because the Engelbrecht Application and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the Engelbrecht Application.

As another example, it would have been obvious to combine or modify the Engelbrecht Application to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,602,903 to LeBlanc; U.S. Patent No. 5,717,737 to Doviak et al.; U.S. Patent No. 5,922,040 to

⁸⁴ Jouko A. Parviainen, et al., "Mobile Information Systems Impact Study," Ontario Ministry of Transportation, August 1988.

⁸⁵ T.S. Rappaport, et al., "Position Location Using Wireless Communications on Highways of the Future," IEEE Communications Magazine, October 1996.

Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Engelbrecht Application in this manner because the Engelbrecht Application and the above-referenced prior art from Appendix B are all directed towards wireless location technology, and it would have been obvious to combine or modify the Engelbrecht Application to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Engelbrecht Application to determine velocity, acceleration, and/or geographical features near a mobile unit as described by the prior art from Appendix O, including, for example, U.S. Patent No. 6,487,500 to Lemelson et al.; U.S. Patent No. 5,657,025 to Ebner et al.; U.S. Patent No. 5,512,903 to Schmidtke; U.S. Patent No. 5,490,073 to Kyrtsov; U.S. Patent No. 5,119,101 to Barnard; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi et al.; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 4,402,049 to Gray; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,517419 to Lanckton et al.; U.S. Patent No. 5,452,211 to Kyrtsov et al.; U.S. Patent No. 5,293,318 to Fukushima; U.S. Patent No. 5,276,451 to Odagawa; U.S. Patent No. 5,374,933 to Kao; and U.S. Patent No. 5,627,549 to Park. One of ordinary skill in the art would have been motivated to combine or modify the Engelbrecht Application in this manner because the Engelbrecht Application and the above-referenced prior art from Appendix O are all directed towards wireless location technology, and it would have been obvious to combine or modify the Engelbrecht Application to implement its position determination and tracking functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Engelbrecht Application to use a controller that activates and/or selects positioning techniques as described by the prior art from Appendix P, including, for example, U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,365,450 to Schuchman et al.; and U.S. Patent No. 5,519,760 to Borkowski et al. One of ordinary skill in the art would have been motivated to combine or modify the Engelbrecht Application in this manner because the Engelbrecht Application and the above-referenced prior art from Appendix P are all directed towards wireless location technology, and it would have been obvious to combine or modify the Engelbrecht Application to implement its position location functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the Engelbrecht Application, but would have modified the Engelbrecht Application with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

O. International PCT Application No. PCT/US97/01238 (Holden et al.)

International PCT Application No. PCT/US97/01238 to Holden et al., entitled “Radio Navigation System Using Out-Of-Band Psuedolites,” published August 7, 1997 (the “Holden Application”). The Holden Application is entitled to a priority date at least as early as February 1, 1996. The Holden Application qualifies as prior art under at least 35 U.S.C. §§ 102(a) and (e). The chart attached hereto as Exhibit 15 provides examples of where the Holden Application

discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the Holden Application does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Holden Application with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Holden Application to use other wireless location technologies, such as those described by the prior art from Appendices E, L, and N. More specifically, it would have been obvious to combine or modify the Holden Application to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the Holden Application to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article⁸⁶; the Maturino-Lozoya Article⁸⁷; and the Junius Article⁸⁸. It would have also been obvious to combine or modify the Holden Application to determine locations by comparing signal characteristic measurements as described by the prior art from

⁸⁶ H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

⁸⁷ H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

⁸⁸ Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Holden Application in this manner because the Holden Application and the above-referenced prior art from Appendices E, L and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the Holden Application to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Holden Application with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendices G, H, and I, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,724,660 to Kauser et al; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; and U.S. Patent No. 5,412,388 to Attwood. One of ordinary skill in the art would have been motivated to combine or modify the Holden Application in this manner because the Holden Application and the above-referenced prior art from Appendices G, H, and I are all directed towards wireless location technology, and it would have been obvious to combine or modify the Holden Application to implement its data output functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Holden Application to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al. and U.S. Patent No. 4,806,940 to Harral et al. One of ordinary skill in the art

would have been motivated to combine or modify the Holden Application in this manner because the Holden Application and the above-referenced prior art from Appendix D are all directed towards wireless location technology, and it would have been obvious to combine or modify the Holden Application to implement its accuracy and display functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Holden Application to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,902,351 to Streit et al.; U.S. Patent No. 5,646,857 to McBurney et al.; U.S. Patent No. 5,488,559 to Seymour; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,602,903 to LeBlanc et al.; and U.S. Patent No. 5,604,765 to Bruno et al. One of ordinary skill in the art would have been motivated to combine or modify the Holden Application in this manner because the Holden Application and the above-referenced prior art from Appendix F are in the same technical field and all disclose location mapping and displaying functionality, and it would have been obvious to combine or modify the Holden Application to implement its mapping and displaying functionality using concepts from other prior art in the same field.

As another example, it would have been obvious to combine or modify the Holden Application to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; the Mobile Information Systems Impact

Study⁸⁹; and the Rappaport Article⁹⁰. One of skill in the art would have been motivated to combine or modify the Holden Application in this manner because the Holden Application and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the Holden Application.

As another example, it would have been obvious to combine or modify the Holden Application to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,602,903 to LeBlanc; U.S. Patent No. 5,717,737 to Doviak et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Holden Application in this manner because the Holden Application and the above-referenced prior art from Appendix B are all directed towards wireless location technology, and it would have been obvious to combine or modify the Holden Application to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Holden Application to use a mobile unit that is capable of two-way voice communication as described by the prior art from Appendix M, including, for example, U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,604,765 to Bruno et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 5,552,772 to Janky; U.S. Patent No. 5,646,630 to Sheynblat;

⁸⁹ Jouko A. Parviainen, et al., "Mobile Information Systems Impact Study," Ontario Ministry of Transportation, August 1988.

⁹⁰ T.S. Rappaport, et al., "Position Location Using Wireless Communications on Highways of the Future," IEEE Communications Magazine, October 1996.

and U.S. Patent No. 5,420,594 to FitzGerald. One of ordinary skill in the art would have been motivated to combine or modify the Holden Application in this manner because the Holden Application and the above-referenced prior art from Appendix M are all directed towards wireless location technology, and it would have been obvious to combine or modify the Holden Application to implement its communication functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the Holden Application, but would have modified the Holden Application with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

P. The van Graas Report

The report by Dr. Frank van Graas et al., entitled “Multisensor Signal Processing Techniques,” was published in 1991 by the National Technical Information Service of Springfield, Virginia and was disseminated under the sponsorship of the Department of Transportation (the “van Graas Report”). Dr. van Graas also published various other related materials, including a dissertation entitled “Hybrid GPS/Loran-C: A Next-Generation of Sole Means Air Navigation.”⁹¹

The van Graas Report qualifies as prior art under at least 35 U.S.C. §§ 102(a) and (b). The chart attached hereto as Exhibit 16 provides examples of where the van Graas Report

⁹¹ Frank van Graas, “Hybrid GPS/Loran-C: A Next-Generation of Sole Means Air Navigation,” Dissertation presented to the faculty of the College of Engineering and Technology of Ohio University, Ohio University Library, November 1988.

discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the van Graas Report does not anticipate the Asserted Claims, it would have been obvious to combine or modify the van Graas Report with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the van Graas Report to use other wireless location technologies, such as those described by the prior art from Appendices E, L, and N. More specifically, it would have been obvious to combine or modify the van Graas Report to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the van Graas Report to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article⁹²; the Maturino-Lozoya Article⁹³; and the Junius Article⁹⁴. It would have also been obvious to combine or modify the van Graas Report to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N,

⁹² H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

⁹³ H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

⁹⁴ Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the van Graas Report in this manner because the van Graas Report and the above-referenced prior art from Appendices E, L, and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the van Graas Report to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the van Graas Report to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al. and U.S. Patent No. 4,806,940 to Harral et al. One of ordinary skill in the art would have been motivated to combine or modify the van Graas Report in this manner because the van Graas Report and the above-referenced prior art from Appendix D are all directed towards wireless location technology, and it would have been obvious to combine or modify the van Graas Report to implement its accuracy and display functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the van Graas Report to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,602,903 to LeBlanc; U.S. Patent No. 5,717,737 to Doviak et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the van Graas Report in this manner because the van Graas Report and the above-referenced prior art from Appendix B are all directed towards

wireless location technology, and it would have been obvious to combine or modify the van Graas Report to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the van Graas Report to use a mobile unit that is capable of two-way voice communication as described by the prior art from Appendix M, including, for example, U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,604,765 to Bruno et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 5,552,772 to Janky; U.S. Patent No. 5,646,630 to Sheynblat; and U.S. Patent No. 5,420,594 to FitzGerald. One of ordinary skill in the art would have been motivated to combine or modify the van Graas Report in this manner because the van Graas Report and the above-referenced prior art from Appendix M are all directed towards wireless location technology, and it would have been obvious to combine or modify the van Graas Report to implement its communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the van Graas Report to use a controller that activates and/or selects positioning techniques as described by the prior art from Appendix P, including, for example, U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,365,450 to Schuchman et al.; and U.S. Patent No. 5,519,760 to Borkowski et al. One of ordinary skill in the art would have been motivated to combine or modify the van Graas Report in this manner because the van Graas Report and the above-referenced prior art from Appendix P are all directed towards wireless location

technology, and it would have been obvious to combine or modify the van Graas Report to implement its position location functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the van Graas Report, but would have modified the van Graas Report with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

Q. The Morris Article

The publication by P.B. Morris et al., entitled “Omega Navigation System Course Book,” was published in 1994 by the National Technical Information Service of Springfield, Virginia (the “Morris Article”). The Morris Article qualifies as prior art under at least 35 U.S.C. §§ 102(a) and (b). The chart attached hereto as Exhibit 17 provides examples of where the Morris Article discloses, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims.

To the extent Plaintiff asserts that the Morris Article does not anticipate the Asserted Claims, it would have been obvious to combine or modify the Morris Article with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Morris Article to use other wireless location technologies, such as those described by the prior art from Appendices A, E, L, and N. More specifically, it would have been obvious to combine or modify the Morris Article to use the time of arrival or time difference of arrival location technologies described by

the prior art from Appendix A, including, for example, U.S. Patent No. 5,327,144 to Stilp et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 6,748,226 to Wortham; and U.S. Patent No. 6,236,365 to LeBlanc et al. It would have also been obvious to combine or modify the Morris Article to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the Morris Article to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article⁹⁵; the Maturino-Lozoya Article⁹⁶; and the Junius Article⁹⁷. It would have also been obvious to combine or modify the Morris Article to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Morris Article in this manner because the Morris Article and the above-referenced prior art from Appendices A, E, L and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the Morris Article to implement its location determining functionality using concepts from prior art in the same field.

⁹⁵ H. Stewart Cobb, et al., "Precision Landing Tests with Improved Integrity Beacon Pseudolites," Presented at ION GPS-95, September 1995.

⁹⁶ H. Maturino-Lozoya, et al., "Pattern Recognition Techniques in Handoff and Service Area Determination," IEEE Vehicular Technology Conference, June 1994.

⁹⁷ Martin Junius, et al., "New Methods for Processing GSM Radio Measurement Data: Applications for Locating, Handover, and Network Management," IEEE Vehicular Technology Conference, June 1994.

As another example, it would have been obvious to combine or modify the Morris Article with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendices G and H, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,724,660 to Kauser et al; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; and U.S. Patent No. 5,412,388 to Attwood. One of ordinary skill in the art would have been motivated to combine or modify the Morris Article in this manner because the Morris Article and the above-referenced prior art from Appendices G and H are all directed towards wireless location technology, and it would have been obvious to combine or modify the Morris Article to implement its data output functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Morris Article to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al. and U.S. Patent No. 4,806,940 to Harral et al. One of ordinary skill in the art would have been motivated to combine or modify the Morris Article in this manner because the Morris Article and the above-referenced prior art from Appendix D are all directed towards wireless location technology, and it would have been obvious to combine or modify the Morris Article to implement its accuracy and display functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Morris Article to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,902,351 to Streit et al; U.S. Patent No. 5,646,857 to McBurney et al.; U.S. Patent No. 5,488,559 to Seymour; U.S.

Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,602,903 to LeBlanc et al.; and U.S. Patent No. 5,604,765 to Bruno et al. One of ordinary skill in the art would have been motivated to combine or modify the Morris Article in this manner because the Morris Article and the above-referenced prior art from Appendix F are in the same technical field and all disclose location mapping and displaying functionality, and it would have been obvious to combine or modify the Morris Article to implement its mapping and displaying functionality using concepts from other prior art in the same field.

As another example, it would have been obvious to combine or modify the Morris Article to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; the Mobile Information Systems Impact Study⁹⁸; and the Rappaport Article⁹⁹. One of skill in the art would have been motivated to combine or modify the Morris Article in this manner because the Morris Article and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the Morris Article.

As another example, it would have been obvious to combine or modify the Morris Article to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,602,903 to LeBlanc;

⁹⁸ Jouko A. Parviainen, et al., "Mobile Information Systems Impact Study," Ontario Ministry of Transportation, August 1988.

⁹⁹ T.S. Rappaport, et al., "Position Location Using Wireless Communications on Highways of the Future," IEEE Communications Magazine, October 1996.

U.S. Patent No. 5,717,737 to Doviak et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Morris Article in this manner because the Morris Article and the above-referenced prior art from Appendix B are all directed towards wireless location technology, and it would have been obvious to combine or modify the Morris Article to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Morris Article to use a mobile unit that is capable of two-way voice communication as described by the prior art from Appendix M, including, for example, U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,604,765 to Bruno et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 5,552,772 to Janky; U.S. Patent No. 5,646,630 to Sheynblat; and U.S. Patent No. 5,420,594 to FitzGerald. One of ordinary skill in the art would have been motivated to combine or modify the Morris Article in this manner because the Morris Article and the above-referenced prior art from Appendix M are all directed towards wireless location technology, and it would have been obvious to combine or modify the Morris Article to implement its communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Morris Article to use a controller that activates and/or selects positioning techniques as described by the prior art from Appendix P, including, for example, U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,365,450 to Schuchman et al.; and U.S. Patent No. 5,519,760 to Borkowski et al. One of ordinary skill in the art would have been motivated to

combine or modify the Morris Article in this manner because the Morris Article and the above-referenced prior art from Appendix P are all directed towards wireless location technology, and it would have been obvious to combine or modify the Morris Article to implement its position location functionality using concepts from prior art in the same field.

As described above, one of ordinary skill in the art would not have limited himself to a specific technology when making modifications or improvements to the Morris Article, but would have modified the Morris Article with the concepts set forth in various location determining solutions of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

R. The FCC E911 Solution

The FCC E911 Solution was conceived by several different wireless carriers and individuals in response to rule making proposed by the Federal Communications Commission (FCC) in the early 1990s to ensure compatibility with Enhanced 911 (E911) emergency calling systems. The FCC E911 Solution qualifies as prior art under at least 35 U.S.C. § 102(a) (because it was known and/or used by others or was published before the earliest conception date that Plaintiff can establish for the Asserted Claims), 35 U.S.C. § 102(b) (because it was in public use and/or on sale or was published more than one year prior to September 9, 1996, Plaintiff's alleged priority date for the Asserted Patents), and/or 35 U.S.C. § 102(e) (because it was described in a patent granted on an application for patent by another filed in the United States before the invention by the Applicants).

Various references disclose the features and functionalities of the FCC E911 Solution and those references also each qualify as prior art under one or more of the above-specified subsections of § 102. An exemplary list of references that evidence the FCC E911 Solution is

provided by the chart below. In addition, Exhibit 18 provides examples of where references that evidence the FCC E911 Solution disclose, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims under 35 U.S.C. § 102, using Plaintiff's apparent and overbroad constructions of the claims.

EVIDENCE FOR THE PRIOR ART FCC E911 SOLUTION	
1.	Federal Communications Commission, "Notice of Proposed Rule Making," <i>In the Matter of Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems</i> , CC Docket No. 94-102, publicly available by at least October 19, 1994 (the "FCC E911 Notice of Proposed Rule Making"). The FCC E911 Notice of Proposed Rule Making qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
2.	Federal Communications Commission, "Report and Order and Further Notice of Proposed Rulemaking," <i>In the Matter of Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems</i> , CC Docket No. 94-102, publicly available by at least July 26, 1996 (the "FCC E911 First Report and Order"). The FCC E911 First Report and Order qualifies as prior art at least under 35 U.S.C. § 102(a).
3.	CTIA, "Comments of the Cellular Telecommunications Industry Association," <i>In the Matter of Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems</i> , CC Docket No. 94-102, publicly available by at least January 9, 1995 (the "CTIA E911 Comments"). The CTIA E911 Comments qualify as prior art under 35 U.S.C. §§ 102(a) and (b).
4.	C.J. Driscoll & Associates, "Survey of Location Technologies to Support Mobile 9-1-1," July 1994 (the "Driscoll Survey"). The Driscoll Survey qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
5.	TR45 Emergency Services Joints Experts Meeting Report, Telecommunications Industry Association, August 23, 1994 (the "TR45 Report"). The TR45 Report qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
6.	R.K. Gojanovich and John DePaola, "The New Jersey Bell Network Proposal for Statewide Enhanced 9-1-1 Service," submitted on November 20, 1989 to the Network Subcommittee of State of New Jersey 9-1-1 Commission (the "NJ Bell E911 Proposal"). The NJ Bell E911 Proposal qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).

EVIDENCE FOR THE PRIOR ART FCC E911 SOLUTION	
7.	U.S. Patent No. 5,724,660 to Kauser, entitled “Method and Apparatus for Locating a Mobile Station by Comparing Calculated Location Area with GPS Coordinates,” issued March 3, 1998 (the “Kauser Patent”). The Kauser Patent, discussed above in Section III.G, qualifies as prior art at least under 35 U.S.C. § 102(e).
8.	U.S. Patent No. 5,388,147 to Grimes, entitled “Cellular Telecommunication Switching System for Providing Public Emergency Call Location Information,” issued February 7, 1995 (the “Grimes ‘147 Patent”). The Grimes ‘147 Patent is entitled to a priority date of at least August 30, 1993. The Grimes ‘147 Patent qualifies as prior art at least under 35 U.S.C. §§ 102(a) and (b).
9.	U.S. Patent No. 5,479,482 to Grimes, entitled “Cellular Terminal for Providing Public Emergency Call Location Information,” issued December 26, 1995 (the “Grimes ‘482 Patent”). The Grimes ‘482 Patent is entitled to a priority date of at least August 30, 1993. The Grimes ‘482 Patent qualifies as prior art at least under 35 U.S.C. § 102(a).
10.	Michael Sena, “Computer-aided dispatching: digital maps aid emergency response and fleet management,” published in the May 1990 edition of <i>Computer Graphics World</i> , Volume 13, Issue 5 (the “Sena Article”). The Sena Article qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).

Defendants reserve the right to contend that the above-specified references evidencing the FCC E911 Solution constitute a single reference for purposes of anticipation. Defendants also reserve the right to contend that, if the references that evidence the FCC E911 Solution are considered individually, it would have been obvious to combine those references to render the Asserted Claims invalid, because those references, or the information contained therein, all discuss the same subject (*i.e.*, the FCC E911 Solution).

To the extent any of the FCC E911 Solution references discloses a particular feature, it would have been obvious to combine that feature in other or all of the FCC E911 Solution references to render the Asserted Claims invalid. The reasons or motivation to modify the FCC E911 Solution references in that manner include, for example, the fact that it would have been common sense to apply concepts that were already being described in one reference about the FCC E911 solution to another reference about the same solution.

To the extent Plaintiff asserts that the FCC E911 Solution, or any reference supporting the FCC E911 Solution, does not anticipate the Asserted Claims, it would also have been obvious to combine or modify the FCC E911 Solution, or any reference supporting the FCC E911 Solution, with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to wireless location technology.

One of ordinary skill in the art would not have limited himself when making modifications to the FCC E911 Solution to concepts solely implemented in or discussed with reference to the FCC E911 Solution. Rather, one of ordinary skill also would have considered the concepts from other location determining technologies of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

S. The FAA System

The FAA conceived an air traffic control and navigation system that utilized wireless location technology at least as early as 1983 (the “FAA System”). The FAA System qualifies as prior art at least under 35 U.S.C. §§ 102(a) and (g)(2) (because it was known and/or used by others or made by others before the earliest conception date that Plaintiff can establish for the Asserted Claims) and under 35 U.S.C. § 102(b) (because it was in public use and/or offered for sale more than one year prior to September 9, 1996, Plaintiff’s alleged priority date for the Asserted Patents).

Various references, including the following exemplary list of references, disclose the features and functionalities of the FAA System, and those references also each qualify as prior art. In addition, Exhibit 19 provides examples of where references that evidence the FAA

System disclose, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims under 35 U.S.C. § 102, using Plaintiff's apparent and overbroad constructions of the claims.

EVIDENCE FOR THE PRIOR ART FAA SYSTEM	
1.	FAA Advisory Circular 20-101C, "Airworthiness Approval of Omega/VLF Navigation Systems For Use in the U.S. National Airspace System (NAS) and Alaska," September 12, 1988 ("FAA I"). FAA I qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
2.	FAA Advisory Circular 20-130A, "Airworthiness Approval of Navigation or Flight Management Systems Integrating Multiple Navigation Sensors," June 14, 1995 ("FAA II"). FAA II qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
3.	FAA Advisory Circular 20-138, "Airworthiness Approval of Global Positioning System (GPS) Navigation Equipment For Use as a VFR and IFR Supplemental Navigation System," May 25, 1994 ("FAA III"). FAA III qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
4.	H. Robert Pilley et al., "Airport Navigation and Surveillance Using GPS and ADS," Institute of Navigation, ION GPS-91, September 12, 1991 ("FAA IV"). FAA IV qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
5.	A310/A300 Flight Management System Pilot's Guide, Honeywell, Inc., December 1993 ("FAA V"). FAA V qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
6.	FAA Historical Chronology, 1926-1996 ("FAA VI").
7.	1990-91 Aviation System Capacity Plan, U.S. DOT and FAA, December 1990 ("FAA VII"). FAA VII qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
8.	FAA Advisory Circular 25-15, "Approval of Flight Management Systems in Transport Category Airplanes," November 20, 1989 ("FAA VIII"). FAA VIII qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
9.	FAA Advisory Circular 25-11, "Transport Category Airplane Electronic Display Systems," July 17, 1987 ("FAA IX"). FAA IX qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
10.	FAA Advisory Circular 20-121A, "Airworthiness Approval of Loran-C Navigation Systems for use in the U.S. National Airspace Systems (NAS) and Alaska," August 24, 1988 ("FAA X"). FAA X qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).

EVIDENCE FOR THE PRIOR ART FAA SYSTEM	
11.	1994 Airman's Information Manual / Federal Aviation Regulations, TAB AERO, September 1993 ("FAA XI"). FAA XI qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
12.	Tekla S. Perry, "In Search of the Future of Air Traffic Control," IEEE Spectrum, August 1997 ("FAA XII"). FAA XII qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
13.	Secondary Surveillance Radar Mode S Advisory Circular, Int'l Civil Aviation Organization, 1983 ("FAA XIII"). FAA XIII qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
14.	ASR-9 System Instruction Book Field Maintenance, FAA, November 2001 ("FAA XIV"). FAA XIV qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).

Defendants reserve the right to contend that the above-specified references evidencing the FAA System constitute a single reference for purposes of anticipation. Defendants also reserve the right to contend that, if the references that evidence the FAA System are considered individually, it would have been obvious to combine those references to render the Asserted Claims invalid, because those references, or the information contained therein, all discuss the same subject (*i.e.*, the FAA System).

To the extent any of the FAA System references discloses a particular feature, it would have been obvious to combine that feature with other or all of the FAA System references to render the Asserted Claims invalid. The reasons or motivation to modify the FAA System references in that manner include, for example, the fact that it would have been common sense to apply concepts that were already being described in one reference about the FAA System to another reference about the same solution.

To the extent Plaintiff asserts that the FAA System, or any reference supporting the FAA System, does not anticipate the Asserted Claims, it would also have been obvious to combine or modify the FAA System, or any reference supporting the FAA System, with concepts from other

prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the FAA System to use other wireless location technologies, such as those described by the prior art from Appendices E, L, and N. More specifically, it would have been obvious to combine or modify the FAA System to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the FAA System to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article; the Maturino-Lozoya Article; and the Junius Article. It would have also been obvious to combine or modify the FAA System to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the FAA System in this manner because the FAA System and the above-referenced prior art from Appendices E, L, and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the FAA System to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the FAA System to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,602,903 to LeBlanc et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the FAA System in this manner because the FAA System and the above-referenced prior art from Appendix B are all directed towards wireless location technology integrated with cellular communication networks, and it would have been obvious to combine or modify the FAA System to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the FAA System to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,806,940 to Harral et al.; U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,936,572 to Loomis et al.; JP Patent Pub. No. 06-003431 to Yusuke et al.; and U.S. Patent No. 5,923,286 to Divakaruni.

As another example, it would have been obvious to combine or modify the FAA System with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendix G, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; and U.S. Patent No. 5,412,388 to Attwood. One of ordinary skill in the art

would have been motivated to combine or modify the FAA System in this manner because the FAA System and the above-referenced prior art from Appendix G are all directed towards wireless location technology, and it would have been obvious to combine or modify the FAA System to implement its data output functionality using concepts from prior art in the same field.

One of ordinary skill in the art would not have limited himself when making modifications to the FAA System to concepts solely implemented in or discussed with reference to the FAA System. Rather, one of ordinary skill also would have considered the concepts from other wireless location technologies of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

T. The ESL Location System

ESL Incorporated developed a wireless location system for providing wireless E911 services at least as early as 1994 (the “ESL Location System”). The ESL Location System is discussed in the “Survey of Location Technologies to Support Mobile 9-1-1” by C.J. Driscoll & Associates.¹⁰⁰ The ESL Location System qualifies as prior art at least under 35 U.S.C. §§ 102(a) and (g)(2) (because it was known and/or used by others or made by others before the earliest conception date that Plaintiff can establish for the Asserted Claims) and under 35 U.S.C. § 102(b) (because it was in public use and/or offered for sale more than one year prior to September 9, 1996, Plaintiff’s alleged priority date for the Asserted Patents). Exhibit 20 provides examples of where references that evidence the ESL Location System disclose, either

¹⁰⁰ C.J. Driscoll & Associates, “Survey of Location Technologies to Support Mobile 9-1-1,” July 1994 (the “Driscoll Survey”). The Driscoll Survey is referenced above in Section III.R with respect to the FCC E911 Solution.

expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims under 35 U.S.C. § 102, using Plaintiff's apparent and overbroad constructions of the claims.

Defendants reserve the right to contend that, to the extent the ESL Location System is evidenced by multiple prior art references, those references constitute a single reference for purposes of anticipation. Defendants also reserve the right to contend that, if the prior art references evidencing the ESL Location System are considered individually, it would have been obvious to combine those references to render the Asserted Claims invalid, because those references, or the information contained therein, all discuss the same subject: the ESL Location System.

To the extent any reference that evidences the ESL Location System discloses a particular feature, it would have been obvious to combine that feature in other or all references that evidence the ESL Location System to render the Asserted Claims invalid. The reasons or motivation to modify the ESL Location System references in that manner include, for example, the fact that it would be common sense to apply concepts to one reference about the ESL Location System that were already being described in another reference about the same system.

To the extent Plaintiff asserts that the ESL Location System, or any reference supporting the ESL Location System, does not anticipate the Asserted Claims, it would also have been obvious to combine or modify the ESL Location System, or any reference supporting the ESL Location System, with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the ESL Location System to use other wireless location technologies, such as those described by the prior art from

Appendices E, L, and N. More specifically, it would have been obvious to combine or modify the ESL Location System to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the ESL Location System to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article; the Maturino-Lozoya Article; and the Junius Article. It would have also been obvious to combine or modify the ESL Location System to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the ESL Location System in this manner because the ESL Location System and the above-referenced prior art from Appendices E, L, and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the ESL Location System to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the ESL Location System to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,602,903 to LeBlanc et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the ESL Location System in this

manner because the ESL Location System and the above-referenced prior art from Appendix B are all directed towards wireless location technology integrated with cellular communication networks, and it would have been obvious to combine or modify the ESL Location System to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the ESL Location System to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,806,940 to Harral et al.; U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,936,572 to Loomis et al.; JP Patent Pub. No. 06-003431 to Yusuke et al.; and U.S. Patent No. 5,923,286 to Divakaruni.

As another example, it would have been obvious to combine or modify the ESL Location System with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendix G, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; and U.S. Patent No. 5,412,388 to Attwood. One of ordinary skill in the art would have been motivated to combine or modify the ESL Location System in this manner because the ESL Location System and the above-referenced prior art from Appendix G are all directed towards wireless location technology, and it would have been obvious to combine or modify the ESL Location System to implement its data output functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the ESL Location System to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; the Mobile Information Systems Impact Study; and the Rappaport Article. One of skill in the art would have been motivated to combine or modify the ESL Location System in this manner because the ESL Location System and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the ESL Location System.

As another example, it would have been obvious to combine or modify the ESL Location System to determine velocity, acceleration, and/or geographical features near a mobile unit as described by the prior art from Appendix O, including, for example, U.S. Patent No. 6,487,500 to Lemelson et al.; U.S. Patent No. 5,657,025 to Ebner et al.; U.S. Patent No. 5,512,903 to Schmidtke; U.S. Patent No. 5,490,073 to Kyrtos; U.S. Patent No. 5,119,101 to Barnard; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi et al.; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 4,402,049 to Gray; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,517419 to Lanckton et al.; U.S. Patent No. 5,452,211 to Kyrtos et al.; U.S. Patent No. 5,293,318 to Fukushima; U.S. Patent No. 5,276,451 to Odagawa; U.S. Patent No. 5,374,933 to Kao; and U.S. Patent No. 5,627,549 to Park. One of ordinary skill in the art would have been motivated to combine or modify the ESL Location System in this manner because the ESL Location System and the above-referenced

prior art from Appendix O are all directed towards wireless location technology, and it would have been obvious to combine or modify the ESL Location System to implement its position determination and tracking functionality using concepts from prior art in the same field.

One of ordinary skill in the art would not have limited himself when making modifications to the ESL Location System to concepts solely implemented in or discussed with reference to the ESL Location System. Rather, one of ordinary skill also would have considered the concepts in other location determining technologies of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

U. The TravTek System

TravTek, an intelligent transportation system, was developed at least as early as 1992 by a partnership between General Motors, the American Automobile Association, the Federal Highway Administration, the Florida Department of Transportation, and the City of Orlando. TravTek qualifies as prior art at least under 35 U.S.C. §§ 102(a) and (g)(2) (because it was known and/or used by others or made by others before the earliest conception date that Plaintiff can establish for the Asserted Claims) and under 35 U.S.C. § 102(b) (because it was in public use and/or offered for sale more than one year prior to September 9, 1996, Plaintiff's alleged priority date for the Asserted Patents).

Various references, including the following exemplary list of references, disclose the features and functionalities of TravTek, and those references also each qualify as prior art.

EVIDENCE FOR THE PRIOR ART TRAVTEK SYSTEM	
1.	Farradyne Systems, Inc., "TravTek Evaluation Plan," prepared for the Federal Highway Administration, April 1991 ("TravTek I"). TravTek I qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
2.	Kent B. Taylor, "TravTek - Information and Services Center," Vehicle Navigation & Information Systems Conference Proceedings, October 1991 ("TravTek II"). TravTek II qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
3.	V. Inman, et al., "Trav-Tek System Architecture Evaluation," U.S. Dept. of Transportation and Federal Highway Administration, July 1995 ("TravTek III"). TravTek III qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
4.	V. Inman, et al., "TravTek Evaluation Yoked Driver Study," U.S. Dept. of Transportation and Federal Highway Administration, October 1995 ("TravTek IV"). TravTek IV qualifies as prior art at least under 35 U.S.C. § 102(a).
5.	V.W. Inman, et al., "TravTek Evaluation Rental and Local User Study," U.S. Dept. of Transportation and Federal Highway Administration, March 1996 ("TravTek V"). TravTek V qualifies as prior art at least under 35 U.S.C. § 102(a).
6.	Michel Van Aerde, et al., "TravTek Evaluation Modeling Study," U.S. Dept. of Transportation and Federal Highway Administration, March 1996 ("TravTek VI"). TravTek VI qualifies as prior art at least under 35 U.S.C. § 102(a).

Defendants reserve the right to contend that, to the extent TravTek is evidenced by multiple prior art references, those references constitute a single reference for purposes of anticipation. Defendants also reserve the right to contend that, if the prior art references evidencing TravTek are considered individually, it would have been obvious to combine those references to render the Asserted Claims invalid, because those references, or the information contained therein, all discuss the same subject: TravTek.

To the extent any reference that evidences TravTek discloses a particular feature, it would have been obvious to combine that feature in other or all references that evidence TravTek to render the Asserted Claims invalid. The reasons or motivation to modify TravTek references in that manner include, for example, the fact that it would be common sense to apply concepts to

one reference about TravTek that were already being described in another reference about the same system.

To the extent Plaintiff asserts that TravTek, or any reference supporting TravTek, does not anticipate the Asserted Claims, it would also have been obvious to combine or modify TravTek, or any reference supporting TravTek, with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

One of ordinary skill in the art would not have limited himself when making modifications to TravTek to concepts solely implemented in or discussed with reference to TravTek. Rather, one of ordinary skill also would have considered the concepts in other location determining technologies of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

V. II Morrow's Vehicle Tracking System

II Morrow Inc. developed a vehicle tracking system at least as early as 1985 (the "II Morrow VTS"). The II Morrow VTS qualifies as prior art at least under 35 U.S.C. §§ 102(a) and (g)(2) (because it was known and/or used by others or made by others before the earliest conception date that Plaintiff can establish for the Asserted Claims) and under 35 U.S.C. § 102(b) (because it was in public use and/or offered for sale more than one year prior to September 9, 1996, Plaintiff's alleged priority date for the Asserted Patents).

Various references, including the following exemplary list of references, disclose the features and functionalities of the II Morrow VTS, and those references also each qualify as prior art.

EVIDENCE FOR THE PRIOR ART II MORROW VTS	
1.	R. Bronson, et al., "II-Morrow's Loran-C Based Vehicle Tracking System," Presented at NAV 85, Land Navigation and Location for Mobile Applications, September 1985. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
2.	II Morrow, Inc., "Maps are custom built using accurate government data!", 1985. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
3.	Lt. Gene Norden, Irvine Police Department, (VTS) Vehicle Tracking System, 1986. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
4.	II Morrow, Inc., "Vehicle Tracking System References", 1986. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
5.	Brain Riley et al., "Vehicle Tracking System for Salem, Oregon Police Department", The Institute of Navigation Proceedings of the National Technical Meeting, January 21-23, 1986. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
6.	II Morrow, Inc., "Kern County Adds Eyes", March 10, 1986. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
7.	II Morrow, Inc., "Punta Gorda Florida Adds Police Car Tracking System", Press Release August 28, 1986. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
8.	II Morrow, Inc., "Pinellas County Florida Chooses II Morrow", Press Release September 4, 1986. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
9.	II Morrow, Inc., "Lafayette Parish adds Vehicle Tracking", Press Release September 8, 1986. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
10.	II Morrow, Inc., "Los Alamos selects II Morrow's VTS", Press Release September 9, 1986. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
11.	II Morrow, Inc., "II Morrow's VTS finds new application", Press Release October 13, 1986. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
12.	II Morrow, Inc., "The vision to take fleet management one step further," 1992. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
13.	E.J. Krakiwsky, Telefax to Karl Poley at II Morrow, Inc. re Building a database of all existing Intelligent Vehicle Highway Systems (IVHS) navigation systems, November 10, 1993. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).

EVIDENCE FOR THE PRIOR ART II MORROW VTS	
14.	II Morrow, Inc., "Fleet management Solutions with GPS Technology," 1995. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
15.	II Morrow, Inc., "II Morrow's Fleet Management Systems Putting Time on Your Side." This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).

Defendants reserve the right to contend that, to the extent the II Morrow VTS is evidenced by multiple prior art references, those references constitute a single reference for purposes of anticipation. Defendants also reserve the right to contend that, if the prior art references evidencing the II Morrow VTS are considered individually, it would have been obvious to combine those references to render the Asserted Claims invalid, because those references, or the information contained therein, all discuss the same subject: the II Morrow VTS.

To the extent any reference that evidences the II Morrow VTS discloses a particular feature, it would have been obvious to combine that feature in other or all references that evidence the II Morrow VTS to render the Asserted Claims invalid. The reasons or motivation to modify the II Morrow VTS references in that manner include, for example, the fact that it would be common sense to apply concepts to one reference about the II Morrow VTS that were already being described in another reference about the same system.

To the extent Plaintiff asserts that the II Morrow VTS, or any reference supporting the II Morrow VTS, does not anticipate the Asserted Claims, it would also have been obvious to combine or modify the II Morrow VTS, or any reference supporting the II Morrow VTS, with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

One of ordinary skill in the art would not have limited himself when making modifications to the II Morrow VTS to concepts solely implemented in or discussed with reference to the II Morrow VTS. Rather, one of ordinary skill also would have considered the concepts in other location determining technologies of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

W. Magnavox's NAVCOM 25 System

Magnavox Electric Systems Co. developed the NAVCOM 25 system at least as early as 1988 (the “Magnavox NAVCOM System”). The Magnavox NAVCOM System qualifies as prior art at least under 35 U.S.C. §§ 102(a) and (g)(2) (because it was known and/or used by others or made by others before the earliest conception date that Plaintiff can establish for the Asserted Claims) and under 35 U.S.C. § 102(b) (because it was in public use and/or offered for sale more than one year prior to September 9, 1996, Plaintiff’s alleged priority date for the Asserted Patents).

Various references, including the following exemplary list of references, disclose the features and functionalities of the Magnavox NAVCOM System, and those references also each qualify as prior art. In addition, Exhibit 21 provides examples of where references that evidence the Magnavox NAVCOM System disclose, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims under 35 U.S.C. § 102, using Plaintiff’s apparent and overbroad constructions of the claims.

EVIDENCE FOR THE PRIOR ART MAGNAVOX NAVCOM SYSTEM	
1.	E.J. Krakiwsky, Telefax to Karl Poley at II Morrow, Inc. re Building a database of all existing Intelligent Vehicle Highway Systems (IVHS) navigation systems, November 10, 1993. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
2.	II Morrow, Inc., "Fleet management Solutions with GPS Technology", 1995. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
3.	II Morrow, Inc., "II Morrow's Fleet Management Systems Putting Time on Your Side." This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
4.	II Morrow, Inc., "Vehicle Tracking System Specifications Sheets: Economical Reliable Accurate Secure." This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
5.	Ben Marcelo, "Vehicle location system serves public safety agencies" Mobile Radio Technology, Vol. 4, Issue 12, December, 1986. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
6.	Magnavox Advanced Products and Systems Company, "Presenting the most advanced AVLS available.", 1988. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
7.	Lawrence A. Whitcomb, "Using Low Cost Magnetic Sensors on Magnetically Hostile Land Vehicles", IEEE Plans, November 29 - December 2, 1988. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
8.	Dan Perlstein et al., "Designing and implementing automatic vehicle location", Mobile Radio Technology, January, 1989. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
9.	Neil Saldin et al., "Magnavox Automatic Vehicle Location Pilot System for the Toronto Department of Ambulance Services", IEE Vehicle Navigation & Information Systems Conference, September 11-13, 1989. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
10.	Mario Cid Fernandez et al., "GPS Navigation Subsystem for Automatic Vehicle Location Systems", NAV 90, Land Navigation and Information Systems Conference, September 18-20, 1990. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
11.	Edward C. Skoblicki, "Automatic Vehicle Location (AVL) Using GPS Enhance Dead Reckoning", International Conference on Vehicle Navigation & Information Systems, October 22, 1991. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).

EVIDENCE FOR THE PRIOR ART MAGNAVOX NAVCOM SYSTEM	
12.	James Hume, Facsimile to Jim McClellan re Sale of Magnavox Electronic Systems Co., July 27, 1993. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
13.	GPS World Newsletter, September 9, 1993. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
14.	The Intelligent Highway, European Transport Telematics Update, Volume 4, Issue 18, March 18, 1994. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
15.	GPS World: News and Applications of the Global Positioning System, Intelligent Vehicles & Highways Special Supplement, April 1994 . This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
16.	GPS World Newsletter, April 11, 1994. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
17.	GPS World: News and Applications of the Global Positioning System, July 1994. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
18.	Douglas Vatier, Facsimile to Adam Hough re NC-25 GPS-Dead Reckoning Navigation System, January 12, 1995. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
19.	Dan Perlstein, "Automatic Vehicle Location Systems: A Tool for Computer Aided Despatch Systems of the Future, IEEE, 1989. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).

Defendants reserve the right to contend that, to the extent the Magnavox NAVCOM System is evidenced by multiple prior art references, those references constitute a single reference for purposes of anticipation. Defendants also reserve the right to contend that, if the prior art references evidencing the Magnavox NAVCOM System are considered individually, it would have been obvious to combine those references to render the Asserted Claims invalid, because those references, or the information contained therein, all discuss the same subject: the Magnavox NAVCOM System.

To the extent any reference that evidences the Magnavox NAVCOM System discloses a particular feature, it would have been obvious to combine that feature in other or all references that evidence the Magnavox NAVCOM System to render the Asserted Claims invalid. The reasons or motivation to modify the Magnavox NAVCOM System references in that manner include, for example, the fact that it would be common sense to apply concepts to one reference about the Magnavox NAVCOM System that were already being described in another reference about the same system.

To the extent Plaintiff asserts that the Magnavox NAVCOM System, or any reference supporting the Magnavox NAVCOM System, does not anticipate the Asserted Claims, it would also have been obvious to combine or modify the Magnavox NAVCOM System, or any reference supporting the Magnavox NAVCOM System, with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Magnavox NAVCOM System to use other wireless location technologies, such as those described by the prior art from Appendices A, E, L, and N. More specifically, it would have been obvious to combine or modify the Magnavox NAVCOM System to use the time of arrival or time difference of arrival location technologies described by the prior art from Appendix A, including, for example, U.S. Patent No. 5,327,144 to Stilp et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 6,748,226 to Wortham; and U.S. Patent No. 6,236,365 to LeBlanc et al. It would have also been obvious to combine or modify the Magnavox NAVCOM System to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et

al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the Magnavox NAVCOM System to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article; the Maturino-Lozoya Article; and the Junius Article. It would have also been obvious to combine or modify the Magnavox NAVCOM System to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Magnavox NAVCOM System in this manner because the Magnavox NAVCOM System and the above-referenced prior art from Appendices A, E, L, and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the Magnavox NAVCOM System to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Magnavox NAVCOM System to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,602,903 to LeBlanc et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Magnavox NAVCOM System in this manner because the Magnavox NAVCOM System and the above-referenced prior art from Appendix B are all directed towards wireless location technology integrated with cellular communication networks, and it would have been obvious to combine or modify the

Magnavox NAVCOM System to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Magnavox NAVCOM System to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,806,940 to Harral et al.; U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,936,572 to Loomis et al.; JP Patent Pub. No. 06-003431 to Yusuke et al.; and U.S. Patent No. 5,923,286 to Divakaruni. It would have also been obvious to combine or modify the Magnavox NAVCOM System to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,902,351 to Streit et al.; U.S. Patent No. 5,646,857 to McBurney et al.; U.S. Patent No. 5,488,559 to Seymour; U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,602,903 to LeBlanc et al.; and U.S. Patent No. 5,604,765 to Bruno et al. One of ordinary skill in the art would have been motivated to combine or modify the Magnavox NAVCOM System in this manner because the Magnavox NAVCOM System and the above-referenced prior art from Appendices D and F all disclose location mapping and displaying functionality, and it would have been obvious to combine or modify the Magnavox NAVCOM System to implement its mapping and displaying functionality using concepts from other prior art in the same field.

As another example, it would have been obvious to combine or modify the Magnavox NAVCOM System with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendices G, H, and I, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; and U.S. Patent No. 5,412,388 to Attwood. One of ordinary skill in the art would have been motivated to combine or modify the Magnavox NAVCOM System in this manner because the Magnavox NAVCOM System and the above-referenced prior art from Appendices G, H, and I are all directed towards wireless location technology, and it would have been obvious to combine or modify the Magnavox NAVCOM System to implement its data output functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Magnavox NAVCOM System to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; the Mobile Information Systems Impact Study; and the Rappaport Article. One of skill in the art would have been motivated to combine or modify the Magnavox NAVCOM System in this manner because the Magnavox NAVCOM System and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the Magnavox NAVCOM System.

As another example, it would have been obvious to combine or modify the Magnavox NAVCOM System to determine velocity, acceleration, and/or geographical features near a

mobile unit as described by the prior art from Appendix O, including, for example, U.S. Patent No. 6,487,500 to Lemelson et al.; U.S. Patent No. 5,657,025 to Ebner et al.; U.S. Patent No. 5,512,903 to Schmidtke; U.S. Patent No. 5,490,073 to Kyrtos; U.S. Patent No. 5,119,101 to Barnard; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi et al.; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 4,402,049 to Gray; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,517419 to Lanckton et al.; U.S. Patent No. 5,452,211 to Kyrtos et al.; U.S. Patent No. 5,293,318 to Fukushima; U.S. Patent No. 5,276,451 to Odagawa; U.S. Patent No. 5,374,933 to Kao; and U.S. Patent No. 5,627,549 to Park. One of ordinary skill in the art would have been motivated to combine or modify the Magnavox NAVCOM System in this manner because the Magnavox NAVCOM System and the above-referenced prior art from Appendix O are all directed towards wireless location technology, and it would have been obvious to combine or modify the Magnavox NAVCOM System to implement its position determination and tracking functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Magnavox NAVCOM System to combine location estimates from multiple technologies as described in various prior art references cited in these contentions, including, for example, U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,686,924 to Trimble et al.; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 5,365,447 to Dennis; European Patent No. 0346461B1 to Sagey; PCT Application No. PCT/US97/01238 to Holden et al.; and the van Graas Report.

One of ordinary skill in the art would not have limited himself when making modifications to the Magnavox NAVCOM System to concepts solely implemented in or discussed with reference to the Magnavox NAVCOM System. Rather, one of ordinary skill also would have considered the concepts in other location determining technologies of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

X. Nav-Data's Fleet-Trak System

Navigation Data Systems Inc. developed a system named Fleet-Trak at least as early as 1989 (the “Fleet-Trak System”). The Fleet-Trak System qualifies as prior art at least under 35 U.S.C. §§ 102(a) and (g)(2) (because it was known and/or used by others or made by others before the earliest conception date that Plaintiff can establish for the Asserted Claims) and under 35 U.S.C. § 102(b) (because it was in public use and/or offered for sale more than one year prior to September 9, 1996, Plaintiff’s alleged priority date for the Asserted Patents).

Various references, including the following exemplary list of references, disclose the features and functionalities of the Fleet-Trak System, and those references also each qualify as prior art.

EVIDENCE FOR THE PRIOR ART FLEET-TRAK SYSTEM	
1.	Thomas R. Parish, “Case Studies of market Research for Three Transportation Communication Products”, U.S. Department of Transportation Research and Special Programs Administration, March, 1994. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
2.	Phillips Business Information, Inc. Global Positioning & Navigation News, “AVL Markets: More Than Position Reporting, LexisNexis, August 8, 1996. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).

Defendants reserve the right to contend that, to the extent the Fleet-Trak System is evidenced by multiple prior art references, those references constitute a single reference for purposes of anticipation. Defendants also reserve the right to contend that, if the prior art references evidencing the Fleet-Trak System are considered individually, it would have been obvious to combine those references to render the Asserted Claims invalid, because those references, or the information contained therein, all discuss the same subject: the Fleet-Trak System.

To the extent any reference that evidences the Fleet-Trak System discloses a particular feature, it would have been obvious to combine that feature in other or all references that evidence the Fleet-Trak System to render the Asserted Claims invalid. The reasons or motivation to modify the Fleet-Trak System references in that manner include, for example, the fact that it would be common sense to apply concepts to one reference about the Fleet-Trak System that were already being described in another reference about the same system.

To the extent Plaintiff asserts that the Fleet-Trak System, or any reference supporting the Fleet-Trak System, does not anticipate the Asserted Claims, it would also have been obvious to combine or modify the Fleet-Trak System, or any reference supporting the Fleet-Trak System, with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

One of ordinary skill in the art would not have limited himself when making modifications to the Fleet-Trak System to concepts solely implemented in or discussed with reference to the Fleet-Trak System. Rather, one of ordinary skill also would have considered the concepts in other location determining technologies of the time. This would have been a result

of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

Y. OCS Technologies' Automatic Vehicle Location System

OCS Technologies developed an automatic vehicle location system at least as early as 1993 (the “OCS AVL System”). The OCS AVL System qualifies as prior art at least under 35 U.S.C. §§ 102(a) and (g)(2) (because it was known and/or used by others or made by others before the earliest conception date that Plaintiff can establish for the Asserted Claims) and under 35 U.S.C. § 102(b) (because it was in public use and/or offered for sale more than one year prior to September 9, 1996, Plaintiff’s alleged priority date for the Asserted Patents).

Various references, including the following exemplary list of references, disclose the features and functionalities of the OCS AVL System, and those references also each qualify as prior art.

EVIDENCE FOR THE PRIOR ART OCS AVL SYSTEM	
1.	OCS, “Integrated software solutions for the criminal justice system.” OCS Technologies Corporation, 1993. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
2.	OCS Technologies - DCP, Tampa Division, “AVL FSD”, June 10, 1993. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
3.	Nicholas Flaskay OCS Technologies letter to Edward J. Krakiwsky re Automatic Vehicle Location product, August 11, 1993. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).

Defendants reserve the right to contend that, to the extent the OCS AVL System is evidenced by multiple prior art references, those references constitute a single reference for purposes of anticipation. Defendants also reserve the right to contend that, if the prior art references evidencing the OCS AVL System are considered individually, it would have been

obvious to combine those references to render the Asserted Claims invalid, because those references, or the information contained therein, all discuss the same subject: the OCS AVL System.

To the extent any reference that evidences the OCS AVL System discloses a particular feature, it would have been obvious to combine that feature in other or all references that evidence the OCS AVL System to render the Asserted Claims invalid. The reasons or motivation to modify the OCS AVL System references in that manner include, for example, the fact that it would be common sense to apply concepts to one reference about the OCS AVL System that were already being described in another reference about the same system.

To the extent Plaintiff asserts that the OCS AVL System, or any reference supporting the OCS AVL System, does not anticipate the Asserted Claims, it would also have been obvious to combine or modify the OCS AVL System, or any reference supporting the OCS AVL System, with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

One of ordinary skill in the art would not have limited himself when making modifications to the OCS AVL System to concepts solely implemented in or discussed with reference to the OCS AVL System. Rather, one of ordinary skill also would have considered the concepts in other location determining technologies of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

Z. The Highway Master System

Highway Master Corp. developed a vehicle tracking system at least as early as 1993 (the “Highway Master System”). The Highway Master System qualifies as prior art at least under 35 U.S.C. §§ 102(a) and (g)(2) (because it was known and/or used by others or made by others before the earliest conception date that Plaintiff can establish for the Asserted Claims) and under 35 U.S.C. § 102(b) (because it was in public use and/or offered for sale more than one year prior to September 9, 1996, Plaintiff’s alleged priority date for the Asserted Patents).

Various references, including the following exemplary list of references, disclose the features and functionalities of the Highway Master System, and those references also each qualify as prior art. In addition, Exhibit 22 provides examples of where references that evidence the Highway Master System disclose, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims under 35 U.S.C. § 102, using Plaintiff’s apparent and overbroad constructions of the claims.

EVIDENCE FOR THE PRIOR ART HIGHWAY MASTER SYSTEM	
1.	Highway Master Mobile Communication & Information Systems: Features & Benefits, 1993. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
2.	Highway Master Mobile Communication & Information Systems: “Finally, There is a Mobile Communication System for The Transportation Industry with a Real Ring to it”, 1993. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
3.	“Long Haul: Trucking Firms Face Driver Shortage, Idling Some Rigs and Causing Delays for Shippers”, The Wall Street Journal A5, December 28, 1993. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
4.	Jim Mele, “Mid-American Dairymen: Proves That it Pays - Committee approach finds cost justification for cellular system ”, 1994. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
5.	Rikki T. Lee, “Trucking Takes the High Tech Road”, Radio Resource Magazine, January/February, 1994. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).

EVIDENCE FOR THE PRIOR ART HIGHWAY MASTER SYSTEM	
6.	Refrigerated Transport, "Mid-America Dairymen Picks Highway Master", March, 1994. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
7.	Milk & Liquid Food Transporter "Mid-Am installs voice communications", Volume 34, No. 5, May, 1994. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
8.	Carol Birkland, "Management Techniques: Track, Talk, Tell", Fleet Equipment, June, 1994. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
9.	William B. Cassidy, "Highway Master Goes Flat-Out in Communications Race", Transport Topics, August 8, 1994. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
10.	"A Unique Solution - Highway Master: Becoming the Mobile Communications System of Choice by Owner-Operators", Landline Magazine, November/December 1994. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
11.	Julie Candler, "Tracking All Trucks: Many Companies are outfitting their fleets with advanced mobile communication technology", Nations Business, December, 1994. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
12.	Highway Master Mobile Communication & Information Systems, Press Release re Benefits of the HighwayMaster Mobile Communication and Information System, December 16, 1994. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
13.	Highway Master Mobile Communication & Information Systems: Features & Benefits, 1995. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
14.	"Truckin'", Wired, January, 1995. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
15.	Highway Master Mobile Communication & Information Systems, Press Release re GPS with the HighwayMaster Mobile Communication and Information System, January 6, 1995. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
16.	Highway Master Mobile Communication & Information Systems, Press Release re Bill Saunders, to speak at the Cellular Telecommunications Industry Conference regarding "The New Frontier: Wireless Data Applications, January 11, 1995. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).

EVIDENCE FOR THE PRIOR ART HIGHWAY MASTER SYSTEM	
17.	Highway Master Mobile Communication & Information Systems, Press Release re Gordon Quick, named HighwayMaster Corp., Chief Operating Officer, January 12, 1995. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
18.	Highway Master Mobile Communication & Information Systems, Press Release re Bill Saunders named HighwayMaster Corp. Chief Executive Officer, January 13, 1995. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
19.	Highway Master Mobile Communication & Information Systems, Fact Sheet HighwayMaster Corp., January 13, 1995. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
20.	Cellular Community Bulletin: A Report on wireless Activities benefitting your constituents “Cellular Technology used to Improve Truck Fleet Efficiency.” This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
21.	U.S. Patent No. 5,155,689 to Wortham, entitled “Vehicle Locating and Communicating Method and Apparatus,” issued October 13, 1992. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).

Defendants reserve the right to contend that, to the extent the Highway Master System is evidenced by multiple prior art references, those references constitute a single reference for purposes of anticipation. Defendants also reserve the right to contend that, if the prior art references evidencing the Highway Master System are considered individually, it would have been obvious to combine those references to render the Asserted Claims invalid, because those references, or the information contained therein, all discuss the same subject: the Highway Master System.

To the extent any reference that evidences the Highway Master System discloses a particular feature, it would have been obvious to combine that feature in other or all references that evidence the Highway Master System to render the Asserted Claims invalid. The reasons or motivation to modify the Highway Master System references in that manner include, for example, the fact that it would be common sense to apply concepts to one reference about the

Highway Master System that were already being described in another reference about the same system.

To the extent Plaintiff asserts that the Highway Master System, or any reference supporting the Highway Master System, does not anticipate the Asserted Claims, it would also have been obvious to combine or modify the Highway Master System, or any reference supporting the Highway Master System, with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Highway Master System to use other wireless location technologies, such as those described by the prior art from Appendices A, E, L, and N. More specifically, it would have been obvious to combine or modify the Highway Master System to use the time of arrival or time difference of arrival location technologies described by the prior art from Appendix A, including, for example, U.S. Patent No. 5,327,144 to Stilp et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 6,748,226 to Wortham; and U.S. Patent No. 6,236,365 to LeBlanc et al. It would have also been obvious to combine or modify the Highway Master System to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the Highway Master System to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article; the Maturino-Lozoya

Article; and the Junius Article. It would have also been obvious to combine or modify the Highway Master System to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Highway Master System in this manner because the Highway Master System and the above-referenced prior art from Appendices A, E, L, and N are all directed towards wireless location technology, and it would have been obvious to combine or modify the Highway Master System to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Highway Master System to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,602,903 to LeBlanc et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Highway Master System in this manner because the Highway Master System and the above-referenced prior art from Appendix B are all directed towards wireless location technology integrated with cellular communication networks, and it would have been obvious to combine or modify the Highway Master System to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Highway Master System to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092

to Kurokawa et al.; U.S. Patent No. 4,806,940 to Harral et al.; U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,936,572 to Loomis et al.; JP Patent Pub. No. 06-003431 to Yusuke et al.; and U.S. Patent No. 5,923,286 to Divakaruni. It would have also been obvious to combine or modify the Highway Master System to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,902,351 to Streit et al.; U.S. Patent No. 5,646,857 to McBurney et al.; U.S. Patent No. 5,488,559 to Seymour; U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,602,903 to LeBlanc et al.; and U.S. Patent No. 5,604,765 to Bruno et al. One of ordinary skill in the art would have been motivated to combine or modify the Highway Master System in this manner because the Highway Master System and the above-referenced prior art from Appendices D and F all disclose location mapping and displaying functionality, and it would have been obvious to combine or modify the Highway Master System to implement its mapping and displaying functionality using concepts from other prior art in the same field.

As another example, it would have been obvious to combine or modify the Highway Master System with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendices G, H, and I, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,999,126 to Ito;

U.S. Patent No. 5,689,270 to Kelley; and U.S. Patent No. 5,412,388 to Attwood. One of ordinary skill in the art would have been motivated to combine or modify the Highway Master System in this manner because the Highway Master System and the above-referenced prior art from Appendices G, H, and I are all directed towards wireless location technology, and it would have been obvious to combine or modify the Highway Master System to implement its data output functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Highway Master System to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; the Mobile Information Systems Impact Study; and the Rappaport Article. One of skill in the art would have been motivated to combine or modify the Highway Master System in this manner because the Highway Master System and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the Highway Master System.

As another example, it would have been obvious to combine or modify the Highway Master System to determine velocity, acceleration, and/or geographical features near a mobile unit as described by the prior art from Appendix O, including, for example, U.S. Patent No. 6,487,500 to Lemelson et al.; U.S. Patent No. 5,657,025 to Ebner et al.; U.S. Patent No. 5,512,903 to Schmidtke; U.S. Patent No. 5,490,073 to Kyrtos; U.S. Patent No. 5,119,101 to Barnard; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi et al.; U.S.

Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 4,402,049 to Gray; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,517419 to Lanckton et al.; U.S. Patent No. 5,452,211 to Kyrtos et al.; U.S. Patent No. 5,293,318 to Fukushima; U.S. Patent No. 5,276,451 to Odagawa; U.S. Patent No. 5,374,933 to Kao; and U.S. Patent No. 5,627,549 to Park. One of ordinary skill in the art would have been motivated to combine or modify the Highway Master System in this manner because the Highway Master System and the above-referenced prior art from Appendix O are all directed towards wireless location technology, and it would have been obvious to combine or modify the Highway Master System to implement its position determination and tracking functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Highway Master System to combine location estimates from multiple technologies as described in various prior art references cited in these contentions, including, for example, U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,686,924 to Trimble et al.; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 5,365,447 to Dennis; European Patent No. 0346461B1 to Sagey; PCT Application No. PCT/US97/01238 to Holden et al.; and the van Graas Report.

One of ordinary skill in the art would not have limited himself when making modifications to the Highway Master System to concepts solely implemented in or discussed with reference to the Highway Master System. Rather, one of ordinary skill also would have considered the concepts in other location determining technologies of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been

obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

AA. University of Calgary Loran-C/GPS System

The University of Calgary developed a hybrid GPS and Loran-C location system at least as early as 1993 (the “Calgary System”). The Calgary System qualifies as prior art at least under 35 U.S.C. §§ 102(a) and (g)(2) (because it was known and/or used by others or made by others before the earliest conception date that Plaintiff can establish for the Asserted Claims) and under 35 U.S.C. § 102(b) (because it was in public use and/or offered for sale more than one year prior to September 9, 1996, Plaintiff’s alleged priority date for the Asserted Patents).

Various references, including the following exemplary list of references, disclose the features and functionalities of the Calgary System, and those references also each qualify as prior art. In addition, Exhibit 23 provides examples of where references that evidence the Calgary System disclose, either expressly or inherently, each element of the Asserted Claims, thereby anticipating those claims under 35 U.S.C. § 102, using Plaintiff’s apparent and overbroad constructions of the claims.

EVIDENCE FOR THE PRIOR ART CALGARY SYSTEM	
1.	Gerard Lachapelle et al. “GPS/Loran-C: An Effective System Mix for Vehicular Navigation in Mountainous Areas”, <i>Navigation: Journal of the Institute of Navigation</i> , Vol. 40, No. 1, Spring 1993. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
2.	G. Lachapelle, et al., “Analysis of Loran-C Performance in the Pemberton Area, B.C.”, <i>Canadian Aeronautics and Space Journal</i> , Vol. 28. No. 2, June 1992. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).
3.	G. Lachapelle, et al., “Analysis of GPS and Loran-C Performance for Land Vehicle Navigation in the Canadian Rockies,” <i>IEEE Aerospace and Electronic Systems Magazine</i> , Vol. 7, Issue 5, May 1992. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b).

EVIDENCE FOR THE PRIOR ART CALGARY SYSTEM

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| 4. | Kendall E. Post, "Real-Time Linear Ensemble Averaging LORAN Receiver Architecture," The Institute of Navigation, Proceedings of the 45th Annual Meeting, June 1989. This reference qualifies as prior art under 35 U.S.C. §§ 102(a) and (b). |
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Defendants reserve the right to contend that, to the extent the Calgary System is evidenced by multiple prior art references, those references constitute a single reference for purposes of anticipation. Defendants also reserve the right to contend that, if the prior art references evidencing the Calgary System are considered individually, it would have been obvious to combine those references to render the Asserted Claims invalid, because those references, or the information contained therein, all discuss the same subject: the Calgary System.

To the extent any reference that evidences the Calgary System discloses a particular feature, it would have been obvious to combine that feature in other or all references that evidence the Calgary System to render the Asserted Claims invalid. The reasons or motivation to modify the Calgary System references in that manner include, for example, the fact that it would be common sense to apply concepts to one reference about the Calgary System that were already being described in another reference about the same system.

To the extent Plaintiff asserts that the Calgary System, or any reference supporting the Calgary System, does not anticipate the Asserted Claims, it would also have been obvious to combine or modify the Calgary System, or any reference supporting the Calgary System, with concepts from other prior art such as, for example, other prior art identified in Section III and/or Appendices A - P, to render the Asserted Claims invalid, because all of that prior art relates to location determining technology.

For example, it would have been obvious to combine or modify the Calgary System to use other wireless location technologies, such as those described by the prior art from Appendices A, E, L, and N. More specifically, it would have been obvious to combine or modify the Calgary System to use the time of arrival or time difference of arrival location technologies described by the prior art from Appendix A, including, for example, U.S. Patent No. 5,327,144 to Stilp et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 6,748,226 to Wortham; and U.S. Patent No. 6,236,365 to LeBlanc et al. It would have also been obvious to combine or modify the Calgary System to use the base station coverage location technologies described by the prior art from Appendix E, including, for example, U.S. Patent No. 5,519,760 to Borkowski et al.; U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,570,412 to LeBlanc; and U.S. Patent No. 5,945,944 to Krasner. It would have also been obvious to combine or modify the Calgary System to use the signal pattern matching functionality described by the prior art from Appendix L, including, for example, U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 5,602,903 to LeBlanc et al.; the Cobb Article; the Maturino-Lozoya Article; and the Junius Article. It would have also been obvious to combine or modify the Calgary System to determine locations by comparing signal characteristic measurements as described by the prior art from Appendix N, including, for example, U.S. Patent No. 5,422,813 to Schuchman; U.S. Patent No. 5,945,944 to Krasner; and U.S. Patent No. 5,570,412 to LeBlanc. One of ordinary skill in the art would have been motivated to combine or modify the Calgary System in this manner because the Calgary System and the above-referenced prior art from Appendices A, E, L, and N are all directed towards wireless location technology, and it would have been obvious to

combine or modify the Calgary System to implement its location determining functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Calgary System to implement data communication using TCP/IP as described by the prior art from Appendix B, including, for example, U.S. Patent No. 5,602,903 to LeBlanc et al.; U.S. Patent No. 5,922,040 to Prabhakaran; and the Applicants' Admitted Prior Art. One of ordinary skill in the art would have been motivated to combine or modify the Calgary System in this manner because the Calgary System and the above-referenced prior art from Appendix B are all directed towards wireless location technology integrated with cellular communication networks, and it would have been obvious to combine or modify the Calgary System to implement its data communication functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Calgary System to display the accuracy and/or error associated with any displayed location as described by the prior art from Appendix D, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,806,940 to Harral et al.; U.S. Patent No. 5,422,813 to Schuchman et al.; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 5,936,572 to Loomis et al.; JP Patent Pub. No. 06-003431 to Yusuke et al.; and U.S. Patent No. 5,923,286 to Divakaruni. It would have also been obvious to combine or modify the Calgary System to implement the map matching functionality described by the prior art from Appendix F, including, for example, U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,902,351 to Streit et al.; U.S. Patent No. 5,646,857 to McBurney et al.; U.S. Patent No. 5,488,559 to Seymour; U.S. Patent No. 5,374,933 to Kao; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No.

5,999,126 to Ito; U.S. Patent No. 6,999,779 to Hashimoto; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 5,552,772 to Janky et al.; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,602,903 to LeBlanc et al.; and U.S. Patent No. 5,604,765 to Bruno et al. One of ordinary skill in the art would have been motivated to combine or modify the Calgary System in this manner because the Calgary System and the above-referenced prior art from Appendices D and F all disclose location mapping and displaying functionality, and it would have been obvious to combine or modify the Calgary System to implement its mapping and displaying functionality using concepts from other prior art in the same field.

As another example, it would have been obvious to combine or modify the Calgary System with functionality for outputting a determined location according to certain criteria as described by the prior art from Appendices G, H, and I, including, for example, U.S. Patent No. 5,546,092 to Kurokawa et al.; U.S. Patent No. 4,814,711 to Olsen et al.; U.S. Patent No. 5,510,798 to Bauer; U.S. Patent No. 5,774,829 to Cisneros; U.S. Patent No. 5,999,126 to Ito; U.S. Patent No. 5,689,270 to Kelley; and U.S. Patent No. 5,412,388 to Attwood. One of ordinary skill in the art would have been motivated to combine or modify the Calgary System in this manner because the Calgary System and the above-referenced prior art from Appendices G, H, and I are all directed towards wireless location technology, and it would have been obvious to combine or modify the Calgary System to implement its data output functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Calgary System to provide location estimates to various destinations for different applications and services, as described by the prior art from Appendix J, including, for example, U.S. Patent No. 5,724,660 to Kauser; U.S. Patent No. 5,959,580 to Maloney; U.S. Patent No. 6,236,365 to

LeBlanc; U.S. Patent No. 5,570,412 to LeBlanc; the Mobile Information Systems Impact Study; and the Rappaport Article. One of skill in the art would have been motivated to combine or modify the Calgary System in this manner because the Calgary System and the above-referenced prior art from Appendix J are all directed towards wireless location technology and tracking systems using GPS or other location information which is in the same technical field as the Calgary System.

As another example, it would have been obvious to combine or modify the Calgary System to determine velocity, acceleration, and/or geographical features near a mobile unit as described by the prior art from Appendix O, including, for example, U.S. Patent No. 6,487,500 to Lemelson et al.; U.S. Patent No. 5,657,025 to Ebner et al.; U.S. Patent No. 5,512,903 to Schmidtke; U.S. Patent No. 5,490,073 to Kyrtos; U.S. Patent No. 5,119,101 to Barnard; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 4,459,667 to Takeuchi; U.S. Patent No. 4,903,212 to Yokouchi et al.; U.S. Patent No. 5,257,195 to Hirata; U.S. Patent No. 5,438,517 to Sennott et al.; U.S. Patent No. 4,402,049 to Gray; U.S. Patent No. 5,740,049 to Kaise; U.S. Patent No. 5,517419 to Lanckton et al.; U.S. Patent No. 5,452,211 to Kyrtos et al.; U.S. Patent No. 5,293,318 to Fukushima; U.S. Patent No. 5,276,451 to Odagawa; U.S. Patent No. 5,374,933 to Kao; and U.S. Patent No. 5,627,549 to Park. One of ordinary skill in the art would have been motivated to combine or modify the Calgary System in this manner because the Calgary System and the above-referenced prior art from Appendix O are all directed towards wireless location technology, and it would have been obvious to combine or modify the Calgary System to implement its position determination and tracking functionality using concepts from prior art in the same field.

As another example, it would have been obvious to combine or modify the Calgary System to combine location estimates from multiple technologies as described in various prior art references cited in these contentions, including, for example, U.S. Patent No. 5,724,660 to Kauser et al.; U.S. Patent No. 5,686,924 to Trimble et al.; U.S. Patent No. 5,646,630 to Sheynblat et al.; U.S. Patent No. 5,774,829 to Cisneros et al.; U.S. Patent No. 6,999,779 to Hashimoto et al.; U.S. Patent No. 5,936,572 to Loomis et al.; U.S. Patent No. 5,365,447 to Dennis; European Patent No. 0346461B1 to Sagey; PCT Application No. PCT/US97/01238 to Holden et al.; and the van Graas Report.

One of ordinary skill in the art would not have limited himself when making modifications to the Calgary System to concepts solely implemented in or discussed with reference to the Calgary System. Rather, one of ordinary skill also would have considered the concepts in other location determining technologies of the time. This would have been a result of ordinary innovation, ordinary skill, and common sense and would have been obvious to try and predictable. Moreover, design incentives and other market forces would have prompted those endeavors.

BB. Applicants' Admitted Prior Art

Statements made by the Applicants in the specification and/or during prosecution of the Asserted Patents and their related patents and/or applications, such as in the "Background of the Invention" section that describes the related art known to the Applicants, are admissions that can be relied upon for both anticipation and obviousness determinations, regardless of whether the admitted prior art would otherwise qualify as prior art under the statutory categories set forth in 35 U.S.C. § 102. *See* MPEP §§ 608.01(c), 2129. To the extent Plaintiff contends that the Asserted Claims are not invalid as anticipated by and/or obvious in view of the prior art under 35

U.S.C. §§ 102 and 103, Defendants reserve the right to rely on Applicants' "Admitted Prior Art" to demonstrate the invalidity of the Asserted Claims.

For example, in the common specification of the Asserted Patents,¹⁰¹ Applicants admit that at least the following concepts were known to one of ordinary skill in the art:

- Wireless cellular communications systems, such as cellular radio telephone networks and other mobile radio and mobile data radio networks, as well as the general principles of wireless telephony described in U.S. Patent No. 5,295,180 to Vendetti, et al. *See, e.g.*, '231 Patent, 1:26-35, 24:11-42.
- Wireless location systems and technologies, such as those that rely on signal strength, trilateration, triangulation, time of arrival, GPS, and/or differential GPS location technologies, as well as the wireless location systems and technologies described in U.S. Patent No. 4,818,998 to Apsell et al., U.S. Patent No. 4,908,629 to Apsell et al., and U.S. Patent No. 4,891,650 to Sheffer. *See, e.g.*, '231 Patent, 1:43-2:29.
- GPS-based wireless location systems in which the GPS signals are transmitted to a central data center for performing the GPS location calculations. *See, e.g.*, '231 Patent, 2:21-29.
- Wireless location systems and technologies described in U.S. Patent No. 6,236,365 to LeBlanc et al. *See, e.g.*, '231 Patent, 12:37-67, 48:40-55.
- Wireless infrastructures and communication standards such as Code Division Multiple Access (CDMA), Time Division Multiple Access (TDMA), Global System for Mobile Communications (GSM), Advanced Mobile Phone Service (AMPS), and Narrowband Advanced Mobile Phone Service (NAMPS). *See, e.g.*, '231 Patent, 15:66-16:34, 23:21-24:5.
- Base station and/or cell ID location technologies required pursuant to Phase I of the FCC's E911 mandate. *See, e.g.*, '231 Patent, 32:37-47.

Additional acknowledgments and admissions regarding the prior art can be found in the prosecution history of the Asserted Patents and their related patents and/or applications, and in Plaintiff's Infringement Contentions. Defendants reserve the right to rely on Applicants' Admitted Prior Art to demonstrate the invalidity of the Asserted Claims.

¹⁰¹ Although Defendants cite to the '231 Patent to identify these admissions by the Applicants, the '484 Patent, which is a continuation of the '231 Patent, contains the same admissions.

CC. The Knowledge of One of Ordinary Skill in the Art

To the extent that Plaintiff contends that any particular feature of the Asserted Claims is a novel aspect of the Asserted Claims, Defendants reserve the right to illustrate that the particular feature was widely known, understood, and implemented by those of ordinary skill in the art at the time of the alleged invention, and that it would have been obvious to combine and/or modify the prior art identified throughout these Supplemental Invalidity Contentions with the knowledge of one of ordinary skill in the art. For example, to the extent Plaintiff contends that determining the location of mobile stations using multiple wireless location technologies is a novel aspect of the Asserted Claims, various prior art systems and references, including those discussed throughout these Supplemental Invalidity Contentions, demonstrate that determining the location of mobile stations using multiple wireless location technologies was widely known, understood, and implemented in the prior art. One of ordinary skill in the art would have known this at the time of the Applicants' alleged invention.

Defendants reserve the right to illustrate this knowledge using any of the prior art references identified in Appendix Q, which provides an exemplary identification of prior art evidencing the state of the art at the time of the alleged invention. Defendants also reserve the right to contend that it would have been obvious to modify any of the prior art identified by these Supplemental Invalidity Contentions and/or listed in Appendix Q to render the Asserted Claims invalid in view of the knowledge of one of ordinary skill in the art.

IV. THE ASSERTED CLAIMS ARE INVALID UNDER 35 U.S.C. § 112 [P.R. 3-3(D)]

Pursuant to Patent Rule 3-3(d), Defendants provide the following grounds of invalidity of the Asserted Claims based on indefiniteness under 35 U.S.C. § 112, ¶ 2, and for lack of written description and/or enablement under 35 U.S.C. § 112, ¶ 1. Defendants reserve all rights to amend their Supplemental Invalidity Contentions under 35 U.S.C. § 112, ¶¶ 1 and 2 depending

upon Plaintiff's claim construction arguments and how the Asserted Claims are ultimately construed by the Court.

A. 35 U.S.C. § 112, ¶ 2: Indefiniteness

The Asserted Claims are each invalid for failure to comply with the definiteness requirement of 35 U.S.C. § 112, ¶ 2. The Asserted Claims fail to particularly point out and distinctly claim the subject matter which the Applicants regarded as their alleged invention such that one skilled in the relevant art would be reasonably apprised of the bounds of the Asserted Claims when read in light of the specification of the Asserted Patents. To the extent the below discussion focuses on any asserted independent claims, the deficiencies which render the independent claims invalid under § 112, ¶ 1 also infect and thus invalidate the claims depending therefrom.

The following phrases render the claims of the Asserted Patents in which those phrases appear indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of wireless signal measurements, signal timing measurements, and wireless signal data “obtained” from transmissions is insolubly ambiguous:

- “wherein said method uses wireless signal measurements obtained from one or more transmissions between said terrestrial mobile station M and one or more of a plurality of terrestrial communication stations,” as recited by Claim 1 of the ‘231 Patent
- “input data obtained using wireless signal measurements obtained by transmissions between said mobile station M and the communication stations,” as recited by Claim 1 of the ‘231 Patent
- “using wireless signal measurements obtained from transmissions between said mobile stations and a plurality of fixed location terrestrial communication stations,” as recited by Claim 10 of the ‘231 Patent
- “using wireless signal data obtained from transmissions between said mobile station M and at least one of a plurality of communication stations,” as recited by Claim 36 of the ‘231 Patent

- “there is a corresponding portion of the signal timing measurements that are obtained as a result of a plurality of wireless signal transmissions between the mobile station M_i and CS,” as recited by Claim 36 of the ‘231 Patent
- “wherein said method uses wireless signal measurements obtained from transmissions between said mobile station and a network having a plurality of communication stations supported on the Earth,” as recited by Claim 162 of the ‘231 Patent
- “wherein there is two way wireless communication between the mobile station and the network in order to obtain the one or more measurements for the second location technique,” as recited by Claim 162 of the ‘231 Patent
- “using wireless signal measurements obtained via transmissions between said mobile stations and a plurality of fixed location terrestrial communication stations,” as recited by Claim 27 of the ‘484 Patent

For example, it is insolubly ambiguous whether the wireless signal measurements are “obtained” from the transmissions as a result of measuring the transmissions, or whether the wireless signal measurements are “obtained” from the transmissions because the wireless signal measurements themselves are contained in the transmissions.

The following phrases render the claims of the Asserted Patents in which those phrases appear indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of data “obtained from” or “obtained using” wireless signal measurements is insolubly ambiguous:

- “input data obtained using wireless signal measurements” as recited by Claim 1 of the ‘231 Patent
- “corresponding data obtained from wireless signal measurements,” as recited by Claim 44 of the ‘484 Patent

The following phrases render the claims of the Asserted Patents in which those phrases appear indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of location “related” information or information “related” to a location is insolubly ambiguous:

- “location related information,” as recited by Claims 1, 65, 106 and 212 of the ‘231 Patent and Claims 44 and 67 of the ‘484 Patent

- “location information related to a location,” as recited by Claim 10 of the ‘231 Patent
- “location related response information,” as recited by Claim 162 of the ‘231 Patent
- “location information, related to a location,” as recited by Claim 27 of the ‘484 Patent

The phrase “position information related to the one mobile station being at L,” as recited by Claim 44 of the ‘484 Patent, renders Claim 44 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of position information “related to the one mobile station being at L” is insolubly ambiguous.

The following phrases render the claims of the Asserted Patents in which those phrases appear indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of “an instance” is insolubly ambiguous:

- “said geographical location information output by an instance of said first technique” and “said second geographical information output by an instance of the second technique,” as recited by Claim 10 of the ‘231 Patent
- “first obtaining a first instance of the location information” and “second obtaining a second instance of the location information,” as recited by Claim 17 of the ‘231 Patent
- “supplied with an instance of said first collection” and “supplied with an instance of said second collection,” as recited by Claim 25 of the ‘231 Patent
- “a corresponding computational machinery implemented instance of each of at least the location technique” and “an instance of the set S” as recited by Claim 36 of the ‘231 Patent
- “wherein for at least one instance of locating one of the mobile stations,” as recited by Claim 67 of the ‘484 Patent

The following phrases render the claims of the Asserted Patents in which those phrases appear indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of “preferring” or “giving preference” to particular location information or location estimates is insolubly ambiguous:

- “preferring one of said first and second location information over the other,” as recited by Claim 27 of the ‘231 Patent
- “preferring a location estimate of said first location technique over a location estimate of said second location technique,” as recited by Claim 51 of the ‘484 Patent
- “giving preference, as more indicative of the location L, to at least one preferred location estimate,” as recited by Claim 67 of the ‘484 Patent

The following phrases render the claims of the Asserted Patents in which those phrases appear indefinite under 35 U.S.C. § 112, ¶ 2 because it is insolubly ambiguous as to how the recited elements are “related” to each other:

- “the signal time delay related to at least one distance between said mobile station M1 and the satellite,” as recited by Claim 10 of the ‘231 Patent
- “a first collection of measurements related to signal time delay of wireless signals,” as recited by Claim 25 of the ‘231 Patent
- “a time of arrival and a time difference of arrival related to wireless signals,” as recited by Claim 28 of the ‘231 Patent
- “wireless related information,” as recited by Claim 106 of the ‘231 Patent
- “wireless signal related data,” as recited by Claim 162 of the ‘231 Patent
- “a location based service related to a corresponding one of the requests,” as recited by Claim 185 of the ‘231 Patent
- “at least one predetermined common location related component,” as recited by Claim 44 of the ‘484 Patent

The following phrases render the claims of the Asserted Patents in which those phrases appear indefinite under 35 U.S.C. § 112, ¶ 2 because it is insolubly ambiguous as to how the data, information, and values “are indicative” of their respective elements:

- “data indicative of time delays of wireless signals” and “information indicative of a distance,” as recited by Claim 17 of the ‘231 Patent
- “data for indicating a likelihood,” as recited by Claims 25, 162, and 215 of the ‘231 Patent

- “data indicative of an error” and “data indicative of an accuracy,” as recited by Claim 215 of the ‘231 Patent
- “location information indicative of a range” and “location information indicative of a wireless signal similarity,” as recited by Claim 36 of the ‘231 Patent
- “information indicating an accuracy of the location estimate L,” as recited by Claim 69 of the ‘231 Patent
- “the values are indicative of signal time delay,” as recited by Claim 162 of the ‘231 Patent

The following phrases render the claims of the Asserted Patents in which those phrases appear indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of a location and/or pattern matching “technique” is insolubly ambiguous:

- “a pattern matching technique,” as recited by Claim 7 of the ‘231 Patent
- “a first technique for determining geographical location information” and “a second technique for determining second geographical location information” as recited by Claim 10 of the ‘231 Patent
- “a predetermined corresponding location technique,” as recited by Claim 25 of the ‘231 Patent
- “a first technique that determines location information” and “a second technique that determines location information,” as recited by Claim 36 of the ‘231 Patent
- “a location technique for determining a geographical indication,” as recited by Claim 106 of the ‘231 Patent
- “first and second mobile station location techniques,” as recited by Claim 162 of the ‘231 Patent
- “a coverage area location technique,” as recited by Claim 212 of the ‘231 Patent
- “one or more wireless location techniques,” as recited by Claim 27 of the ‘484 Patent
- “first and second different mobile station location techniques,” as recited by Claim 44 of the ‘484 Patent
- “a plurality of mobile station location estimating techniques,” as recited by Claim 51 of the ‘484 Patent

The phrase “a plurality of terrestrial communication stations, each terrestrial communication capable of,” as recited by Claim 1 of the ‘231 Patent, renders Claim 1 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase “each terrestrial communication” is insolubly ambiguous.

The phrase “for each of the input requests, providing to one or more mobile station location determining sources, one or more location requests,” as recited by Claim 10 of the ‘231 Patent, renders Claim 10 indefinite under 35 U.S.C. § 112, ¶ 2 because it is insolubly ambiguous whether multiple “location requests” can be provided to a single “location determining source.”

The phrase “wherein said one or more location determining sources perform the following techniques (i), and (ii),” as recited by Claim 10 of the ‘231 Patent, renders Claim 10 indefinite under 35 U.S.C. § 112, ¶ 2 because it is insolubly ambiguous whether each location determining source must perform techniques (i) and (ii) or whether the location determining sources collectively perform techniques (i) and (ii).

The phrase “a first technique for determining geographical location information of each of at least some of said mobile stations, wherein for at least some geographical location of some mobile station M1 of the at least some mobile stations,” as recited by Claim 10 of the ‘231 Patent, renders Claim 10 indefinite under 35 U.S.C. § 112, ¶ 2 because it is insolubly ambiguous which of the “some mobile stations,” “some geographical location,” and “some mobile station M1,” and “some mobile stations” are being referred to.

The phrase “first output location data for locating a first of the mobile stations” and “second output location data for locating a second of the mobile stations,” as recited by Claim 10 of the ‘231 Patent, renders Claim 10 indefinite under 35 U.S.C. § 112, ¶ 2 because it is insolubly ambiguous as to how the output location data is “for locating ... the mobile stations.”

The phrase “first transmitting said first output location data to a corresponding destination via a communications network” and “second transmitting said second output location data to a corresponding destination via a communications network,” as recited by Claim 10 of the ‘231 Patent, renders Claim 10 indefinite under 35 U.S.C. § 112, ¶ 2 because it is insolubly ambiguous as to whether each “communications network” is the same communications network or a different communications network.

The phrase “said first location technique estimates a location of the mobile station” and “said second location technique estimates a location of the mobile station,” as recited by Claim 162 of the ‘231 Patent, renders Claim 162 indefinite under 35 U.S.C. § 112, ¶ 2 because it is insolubly ambiguous as to whether the location estimated by each of the first and second location techniques is the same location or a different location.

The phrase “the first value is used to obtain the resulting information for one of the locations, and the second value is used to obtain the resulting information for one of the locations,” as recited by Claim 17 of the ‘231 Patent, renders Claim 17 indefinite under 35 U.S.C. § 112, ¶ 2 because it is insolubly ambiguous as to whether the “one of the locations” obtained using the first and second values are the same location or different locations.

The phrase “for at least one occurrence of locating one of the mobile stations for being M,” as recited by Claims 7, 106, 212, and 215 of the ‘231 Patent, renders these claims indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase “for being M” is insolubly ambiguous.

The phrase “the signal characteristics D from (A3) for M being M_i ,” as recited by Claim 36 of the ‘231 Patent, renders Claim 36 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase “for M being M_i ” is insolubly ambiguous.

The phrase “a wireless signal similarity or correspondence for transmissions between the communication stations and a mobile station being located,” as recited by Claim 36 of the ‘231 Patent, renders Claim 36 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of a wireless signal “similarity or correspondence” is insolubly ambiguous.

The phrase “the geographical location information includes one or more geographically dependent wireless signal characteristics,” as recited by Claim 106 of the ‘231 Patent, renders Claim 106 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of one or more “geographically dependent wireless signal characteristics” is insolubly ambiguous.

The phrase “receiving, over time, a plurality of location estimates of the mobile station,” as recited by Claim 51 of the ‘484 Patent, renders Claim 51 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of receiving location estimates “over time” is insolubly ambiguous.

The phrase “determining a likely location estimate of a location,” as recited by Claim 67 of the ‘484 Patent, renders Claim 67 indefinite under 35 U.S.C. § 112, ¶ 2 because it is insolubly ambiguous as to what constitutes a “likely” location estimate.

The phrase “a selector for giving preference,” as recited by Claim 67 of the ‘484 Patent, renders Claim 67 indefinite under 35 U.S.C. § 112, ¶ 2 because it is insolubly ambiguous as to what constitutes a “selector.”

The phrase “a combiner for obtaining said likely location estimate,” as recited by Claim 67 of the ‘484 Patent, renders Claim 67 indefinite under 35 U.S.C. § 112, ¶ 2 because it is insolubly ambiguous as to what constitutes a “combiner.”

The phrase “the estimated location is associated with an area of a wireless coverage area,” as recited by Claim 212 of the ‘231 Patent, renders Claim 212 indefinite under 35 U.S.C.

§ 112, ¶ 2 because it is insolubly ambiguous as to how the location is “associated” with “an area of a wireless coverage area.”

The phrase “A method for locating a first wireless mobile stations using measurements of wireless signals, wherein at least one of: (i) said measurements, and (ii) said wireless signals are transmitted between the first mobile station and at least one of a plurality of terrestrial transceivers,” as recited by Claim 44 of the ‘484 Patent, renders Claim 44 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of “a first wireless mobile stations” and “the first mobile station” is insolubly ambiguous. For example, it is insolubly ambiguous whether the “first wireless mobile stations” is the same as the “first mobile station,” and whether the “first wireless mobile stations” and the “first mobile station” constitute a single mobile station or multiple mobile stations.

The following phrases render the claims of the Asserted Patents in which those phrases appear indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase “not supported on the Earth’s surface” and the scope of the phrase “supported on the Earth” are insolubly ambiguous:

- “a delay time of a signal from at least one non-terrestrial wireless transmitter, not supported on the Earth’s surface,” as recited by Claim 1 of the ‘231 Patent
- “one or more non-terrestrial communication stations above and not supported on the Earth’s surface,” as recited by Claim 36 of the ‘231 Patent
- “a non-terrestrial communication station above and not supported on the Earth’s surface,” as recited by Claim 36 of the ‘231 Patent
- “a plurality of communication stations supported on the Earth,” as recited by Claim 162 of the ‘231 Patent
- “a plurality of transmitting stations, located above and not supported on the Earth’s surface,” as recited by Claim 185 of the ‘231 Patent
- “one or more transmitting stations above and not supported on the Earth’s surface,” as recited by Claim 185 of the ‘231 Patent

The following phrases render the claims of the Asserted Patents in which those phrases appear indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase “resulting location estimate” and the scope of the phrase “resulting location information” are insolubly ambiguous:

- “outputting a resulting location estimate of the mobile station M, a determination of said resulting location estimate is dependent upon at least one of (a) and (b) following: (a) a first value obtained from said first location related information, and (b) a second value obtained from said second location related information,” as recited by Claim 1 of the ‘231 Patent
- “determining resulting location information, for each of one or more locations of said mobile station,” as recited by Claim 17 of the ‘231 Patent
- “outputting said resulting location information for each of the one or more locations,” as recited by Claim 17 of the ‘231 Patent
- “outputting, to a source for accessing location data for said mobile station, resulting location information,” as recited by Claim 25 of the ‘231 Patent
- “determining resulting location information of the mobile station,” as recited by Claim 162 of the ‘231 Patent
- “wherein the estimated location is included in the resulting location estimate of the mobile station M,” as recited by Claim 212 of the ‘231 Patent
- “determining resulting location information for each of the first and second mobile stations,” as recited by Claim 44 of the ‘484 Patent
- “wherein there is at least one predetermined common location related component activated for determining the resulting location information for each of said first and second mobile stations,” as recited by Claim 44 of the ‘484 Patent
- “providing said resulting location information for each of the first and second mobile stations for presentation,” as recited by Claim 44 of the ‘484 Patent
- “wherein said presentation for at least one of said first and second mobile stations is determined according to an expected accuracy of said resulting location information,” as recited by Claim 44 of the ‘484 Patent
- “determining, a plurality of consecutive resulting location estimates,” as recited by Claim 51 of the ‘484 Patent
- “deriving, for at least one time during the tracking, a corresponding one of said resulting location estimates of the mobile station,” as recited by Claim 51 of the ‘484 Patent

- “deriving, for at least one time during the tracking, a corresponding one of said resulting location estimates of the mobile station,” as recited by Claim 51 of the ‘484 Patent
- “for at least one of said resulting location estimates,” as recited by Claim 51 of the ‘484 Patent

The phrase “resulting estimator,” as recited by Claim 67 of the ‘484 Patent, renders Claim 67 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase “resulting estimator” is insolubly ambiguous.

The following phrases render the claims of the Asserted Patents in which those phrases appear indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the term “available” and the scope of the term “unavailable” are insolubly ambiguous:

- “wherein, when available, the first location related information includes at least a first geographical indication for a location of the mobile station M,” as recited by Claim 1 of the ‘231 Patent
- “wherein, when available, the second location related information includes at least a second geographical indication for a location of the mobile station M,” as recited by Claim 1 of the ‘231 Patent
- “at least when said first collection is not available,” as recited by Claim 25 of the ‘231 Patent
- “preferring one of said first and second location information over the other when both are available for locating the mobile station,” as recited by Claim 27 of the ‘231 Patent
- “combining said first and second location information when both are available for locating the mobile station,” as recited by Claim 27 of the ‘231 Patent
- “wherein the estimated location is included in the resulting location estimate of the mobile station M when the first location related information is unavailable,” as recited by Claim 212 of the ‘231 Patent
- “preferring a location estimate of said first location technique over a location estimate of said second location technique when both are available for substantially a same location of the mobile station,” as recited by Claim 51 of the ‘484 Patent

For example, after “receiving first and second location related information,” how the location information could possibly be “unavailable” is insolubly ambiguous.

The phrase “geographical extent,” as recited by Claims 10, 25, 36, 162, and 185 of the ‘231 Patent, renders these claims indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase “geographical extent” is insolubly ambiguous.

The phrases “first obtaining, in response to a first of the location requests received from a first of the requesting sources” and “second obtaining, in response to a second of the location requests received from a second of the requesting sources,” as recited by Claim 10 of the ‘231 Patent and Claim 27 of the ‘484 Patent, renders these claims indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of “location requests” received from “requesting sources” is insolubly ambiguous. For example, Claim 10 recites “receiving, from a plurality of location requesting sources, a plurality of input requests” and “for each of the input requests, providing to one or more mobile station location determining sources, one or more location requests.” Thus, because this claim recites that the “input requests,” rather than the “location requests,” are received from the “location requesting sources,” it is insolubly ambiguous how the “first obtaining” and “second obtaining” can be in response to “location requests” received from “requesting sources.”

The phrase “wherein communication between the mobile station and at least one terrestrial transceiver is used to improve said first instance,” as recited by Claim 17 of the ‘231 Patent, renders Claim 17 indefinite under 35 U.S.C. § 112, ¶ 2 because it is insolubly ambiguous how the terrestrial transceiver is used to “improve” the “first instance.”

The phrase “a representation of a locus of locations having substantially a same time difference of arrival for wireless signals,” as recited by independent Claim 17 of the ‘231 Patent, renders Claim 17 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase is

insolubly ambiguous. For example, the extent of similarity required for each time difference of arrival to be “substantially” the same is insolubly ambiguous. As another example, the scope of the phrase “a representation of a locus of locations” is insolubly ambiguous.

The phrase “when said location technique is supplied with sufficient corresponding input information,” as recited by Claim 51 of the ‘231 Patent, renders Claim 51 indefinite under 35 U.S.C. § 112, ¶ 2 because it is insolubly ambiguous as to what constitutes “sufficient” corresponding input information.

The phrase “the corresponding input information is at least partially derived from measurements of wireless signals,” as recited by Claim 51 of the ‘231 Patent, renders Claim 51 indefinite under 35 U.S.C. § 112, ¶ 2 because it is insolubly ambiguous as to the extent that the input information is “partially” derived from measurements of wireless signals.

The phrase “preferring a location estimate of said first location technique over a location estimate of said second location technique when both are available for substantially a same location of the mobile station,” as recited by Claim 51 of the ‘484 Patent, renders Claim 51 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase is insolubly ambiguous. For example, the extent of similarity required for a location to be “substantially” the same is insolubly ambiguous.

The following phrases render the claims of the Asserted Patents in which those phrases appear indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of these phrases is insolubly ambiguous:

- “wherein for receiving a first collection of measurements related to signal time delay of wireless signals ... there is a predetermined corresponding location technique for determining first location information of the mobile station,” as recited by Claim 25 of the ‘231 Patent

- “when said corresponding location technique for using the first collection is supplied with an instance of said first collection,” as recited by Claim 25 of the ‘231 Patent
- “wherein for receiving a second collection of measurements obtained from wireless signals transmitted between said mobile station and one or more fixed location terrestrial stations … there is a predetermined corresponding location technique for determining second location information of the mobile station,” as recited by Claim 25 of the ‘231 Patent
- “when said corresponding location technique for receiving the second collection is supplied with an instance of said second collection,” as recited by Claim 25 of the ‘231 Patent

For example, it is insolubly ambiguous whether the “predetermined corresponding location technique” is “for receiving a first collection of measurements,” “for determining first location information of the mobile station,” and/or “for using the first collection.”

The phrase “signal time delay dependent condition,” as recited by Claims 25 and 28 of the ‘231 Patent, renders these claims indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase “signal time delay dependent condition” is insolubly ambiguous.

The following phrase recited by Claim 185 of the ‘231 Patent renders Claim 185 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of this phrase is insolubly ambiguous:

- “wherein for at least one mobile station (M_p) of the mobile stations M_k and the corresponding location for M_p according to (B) above, the location indicative data for M_n is not obtained using geographic data indicative of a spatial range between the mobile station M_p and one or more transmitting stations above and not supported on the Earth’s surface, wherein the geographic data would have to be determined using signals received at the mobile station M_p from the one or more transmitting stations”

For example, it is insolubly ambiguous which mobile station M_n of the plurality of mobile stations is being referenced.

The phrase “spatial range,” as recited by Claims 1 and 185 of the ‘231 Patent, renders these claims indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase “spatial range” is insolubly ambiguous.

The phrase “wherein the estimated location is associated with an area of a wireless coverage area for one of said communication stations” as recited by Claim 212 of the ‘231 Patent, renders Claim 212 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the term “associated” is insolubly ambiguous. For example, the manner and/or extent to which the estimated location must be “associated” with an area of a wireless coverage area is insolubly ambiguous.

The phrase “obtaining one or more: (i) data indicative of an error for a geographical extent for locating the mobile station M, (ii) data indicative of an accuracy in a geographical extent for locating the mobile station M, and (iii) data indicative of a likelihood of the mobile station M being in a geographical extent for locating the mobile station M,” as recited by Claim 215 of the ‘231 Patent, renders Claim 215 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase is insolubly ambiguous. For example, the scope of the phrase “data indicative of an error,” “data indicative of an accuracy,” and “data indicative of a likelihood of the mobile station M being in a geographical extent” is insolubly ambiguous. As another example, it is insolubly ambiguous how “data indicative” of an error, accuracy, or likelihood can be “for locating the mobile station M.”

The following phrases render the claims of the Asserted Patents in which those phrases appear indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrases “a representation identifying a ... geographical indication,” “a representation identifying a ... geographical location,” and “a representation of a location estimate” is insolubly ambiguous:

- “said first output location data including a representation identifying a first geographical indication of the first mobile station,” as recited by Claim 10 of the ‘231 Patent
- “said second output location data including a representation identifying a second geographical indication of the second mobile station,” as recited by Claim 10 of the ‘231 Patent

- “displaying a representation of a location estimate L of the first mobile station,” as recited by Claim 69 of the ‘231 Patent
- “said first output location data including a representation identifying a first geographical location of the first location,” as recited by Claim 27 of the ‘484 Patent
- “second output location data including a representation identifying a second geographical location of the second location,” as recited by Claim 27 of the ‘484 Patent
- “said first output criteria includes information for determining said representation of said first geographical location,” as recited by Claim 33 of the ‘484 Patent

The following phrases render the claims of the Asserted Patents in which those phrases appear indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of these phrases is insolubly ambiguous:

- “first location related information representing one or more of: a first range of locations for the first mobile station, and a second range of locations for the second mobile station,” as recited by Claim 44 of the ‘484 Patent
- “second location related information representing one or more of: a third range of locations for the first mobile station, and a fourth range of locations for the second mobile station,” as recited by Claim 44 of the ‘484 Patent

For example, it is insolubly ambiguous how the location related information is “representing” one or more ranges of locations.

The phrase “wherein for at least one of said first and second output criteria, there is an output criteria for another of the location requests that is different from said at least one output criteria,” as recited by Claim 27 of the ‘484 Patent, renders Claim 27 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase “there is an output criteria” is insolubly ambiguous.

The phrase “said determining step includes snapping to the roadway,” as recited by Claim 34 of the ‘484 Patent, renders Claim 34 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the term “snapping” is insolubly ambiguous.

The phrase “determining a first location granularity at which a location estimate of the first mobile station is transmitted in said first output location data, wherein said first location granularity is dependent upon said first application,” as recited by Claim 36 of the ‘484 Patent, renders Claim 36 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the term “granularity” is insolubly ambiguous.

The phrase “providing access to first and second different mobile station location techniques,” as recited by Claim 44 of the ‘484 Patent, renders Claim 44 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase “location techniques” is insolubly ambiguous.

The phrase “wherein neither of the first and second position information is dependent upon a change in the other,” as recited by Claim 44 of the ‘484 Patent, renders Claim 44 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase “dependent upon a change in the other” is insolubly ambiguous.

The phrase “determined according to an expected accuracy of said resulting location information for the at least mobile station,” as recited by Claim 44 of the ‘484 Patent, renders Claim 44 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase “for the at least mobile station” is insolubly ambiguous.

The phrase “said second source is dependent upon a result from a different second location computing component,” as recited by Claim 67 of the ‘484 Patent, renders Claim 67 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase “different second location computing component” is insolubly ambiguous. For example, it is insolubly ambiguous as to what constitutes a “different” location computing component.

The phrase “said first and second sources can provide, if activated, different location estimates,” as recited by Claim 67 of the ‘484 Patent, renders Claim 67 indefinite under 35

U.S.C. § 112, ¶ 2 because the scope of the phrase “different location estimates” is insolubly ambiguous. For example, it is insolubly ambiguous as to what constitutes “different” location estimates.

The phrase “the second location computing component is not dependent upon an output from the first location computing component,” as recited by Claim 67 of the ‘484 Patent, renders Claim 67 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase is insolubly ambiguous. For example, how the second location computing component is “not dependent upon” an output from the first location computing component is insolubly ambiguous.

The following phrases, as recited by Claim 67 of the ‘484 Patent, render Claim 67 indefinite under 35 U.S.C. § 112, ¶ 2 because the scope of the phrase “when estimating the mobile” is insolubly ambiguous:

- “the first source is not dependent upon on an output from the second location computing component when estimating the mobile at the location L₁”
- “the second location computing component is not dependent upon an output from the first location computing component when estimating the mobile at the location L₂”

The following phrases render the Asserted Claims in which those phrases appear indefinite under 35 U.S.C. § 112, ¶ 2 due to the lack of a proper antecedent basis:

- “the one or more satellites,” as recited by Claim 17 of the ‘231 Patent
- “the resulting information,” as recited by Claim 17 of the ‘231 Patent
- “the first request” and “the second request,” as recited by Claim 27 of the ‘484 Patent
- “the signal measurements,” as recited by Claim 27 of the ‘484 Patent
- “the location L₂,” as recited by Claim 67 of the ‘484 Patent

Asserted Claim 185 of the ‘231 Patent and Asserted Claim 67 of the ‘484 Patent are also indefinite under 35 U.S.C. § 112, ¶ 2 for reciting both apparatus and process limitations and

therefore impermissibly mixing two statutory classes of patentable subject matter. For example, Claim 185 of the ‘231 Patent, which is directed towards a “mobile station location system,” recites the following method steps:

- “(a-1) the network node receives the location information for M_i provided by a first of the location providing sources”
- “(a-2) the corresponding location indicative data for the mobile station M_i is obtained using the location information for M_i ”
- “(b-1) the network node receives the location information for M_k provided by one of the location providing sources”
- “(b-2) the corresponding location indicative data for the mobile station M_k is obtained using the location information for M_k received by the network node”
- “the destination determination component selectively determines a corresponding network destination”
- “the network destination accesses the location indicative data for M_n in performing a location based service”

As another example, Claim 67 of the ‘484 Patent, which is directed towards a “mobile station location system,” recites the following method steps:

- “then each such source supplied with its corresponding data, outputs a corresponding location estimate of a geographical location of the mobile station M ”
- “for at least one instance of locating one of the mobile stations, said first and second sources can provide, if activated, different location estimates”

As such, the Asserted Claims fail to particularly point out and distinctly claim the subject matter which the Applicants regarded as their alleged invention, rendering the Asserted Claims invalid for failure to comply with the definiteness requirement of 35 U.S.C. § 112, ¶ 2.

B. 35 U.S.C. § 112, ¶ 1: Insufficient Written Description

The Asserted Claims are each invalid for failure to comply with the written description requirement under 35 U.S.C. § 112, ¶ 1. To the extent the below discussion focuses on any

asserted independent claims, the deficiencies which render the independent claims invalid under § 112, ¶ 1 also infect and thus invalidate the claims depending therefrom.

The specification of the Asserted Patents does not contain written description support at least for the following terms and/or phrases, rendering the claims of the Asserted Patents in which those terms and/or phrases appear invalid under § 112, ¶ 1:

- “spatial range,” as recited by Claims 1 and 185 of the ‘231 Patent
- “geographical extent,” as recited by Claims 10, 25, 36, 162, 185, and 215 of the ‘231 Patent
- “wherein for at least one of said first and second output criteria there is an output criteria for another of the location requests that is different from said at least one output criteria,” as recited by Claim 10 of the ‘231 Patent
- “wherein communication between the mobile station and at least one terrestrial transceiver is used to improve said first instance,” as recited by Claim 17 of the ‘231 Patent
- “a representation of a locus of locations having substantially a same time difference of arrival for wireless signals communicated between: the mobile station, and each of at least two of the transceivers,” as recited by Claim 17 of the ‘231 Patent
- “signal time delay dependent condition,” as recited by Claims 25 and 28 of the ‘231 Patent
- “combining said first and second location information when both are available for locating the mobile station,” as recited by Claim 27 of the ‘231 Patent
- “wherein at least one of said steps of receiving, first obtaining, second obtaining, first transmitting, and second transmitting receives or transmits wireless location related information on a TCP/IP network,” as recited by Claim 65 of the ‘231 Patent
- “wherein said display information is for displaying a map of an area having the location estimate L, and for concurrently displaying information indicating an accuracy of the location estimate L,” as recited by Claim 69 of the ‘231 Patent
- “wireless signals received at the mobile station from one or more satellites,” as recited by Claim 162 of the ‘231 Patent
- “computational equipment including ... a selection component,” as recited by Claim 185 of the ‘231 Patent

- “computational machinery performing a coverage area location technique for estimating a location of said mobile station M at a location L, wherein the estimated location is associated with an area of a wireless coverage area for one of said communication stations, wherein the estimated location is included in the resulting location estimate of the mobile station M when the first location related information is unavailable or unsatisfactory for the location L,” as recited by Claim 212 of the ‘231 Patent
- “information for determining one of a correspondence and a similarity with the corresponding signal characteristic data in the data store for one or more locations L,” as recited by Claim 36 of the ‘231 Patent
- “the location technique performs an interpolation dependent on the data pairings,” as recited by Claim 106 of the ‘231 Patent
- “determining … one or more geographical features near said at least one resulting location estimate,” as recited by Claim 56 of the ‘484 Patent
- “a selector for giving preference, as more indicative of the location L, to at least one preferred location estimate obtained from said corresponding location estimates” and “a combiner for obtaining said likely location estimate as a function of said two or more of said corresponding location estimates,” as recited by Claim 67 of the ‘484 Patent

Moreover, the specification of the Asserted Patents does not contain written description support for the Asserted Claims that recite some form of both (i) a non-terrestrial or satellite based transmitter for determining the location of a mobile station, and (ii) a terrestrial based transmitter for determining the location of a mobile station. Accordingly, the following Asserted Claims are invalid for failing to comply with the written description requirement under § 112,

¶ 1:

- Claim 1 of the ‘231 Patent, which recites both “terrestrial communication stations” and “at least one non-terrestrial wireless transmitter” for “locating each terrestrial mobile station”
- Claim 10 of the ‘231 Patent, which recites both “fixed location terrestrial communication stations” and “a satellite” for “locating mobile stations”
- Claim 17 of the ‘231 Patent, which recites both “a plurality of terrestrial transceivers” and “a satellite” for “locating a wireless mobile station”

- Claim 25 of the ‘231 Patent, which recites both “one or more fixed location terrestrial stations” and “one or more satellites” for “providing a location estimate of a wireless mobile station”
- Claim 36 of the ‘231 Patent, which recites both “communication stations at terrestrial locations” and “one or more non-terrestrial communication stations” for “locating at least one mobile station”
- Claim 162 of the ‘231 Patent, which recites both “a plurality of communication stations supported on the Earth” and “one or more satellites” for “locating a terrestrial mobile station”
- Claim 67 of the ‘484 Patent, which recites both “a network of communication stations” and “one or more non-terrestrial wireless signal transmitting stations” for “for locating a plurality of mobile stations”

As such, the specification of the Asserted Patents does not contain written description support for the Asserted Claims, rendering the Asserted Claims invalid for failure to comply with the written description requirement under 35 U.S.C. § 112, ¶ 1.

C. 35 U.S.C. § 112, ¶ 1: Lack of Enablement

The Asserted Claims are each invalid for failure to comply with the enablement requirement under 35 U.S.C. § 112, ¶ 1. The specification of the Asserted Patents fails to provide an enabling disclosure of the Asserted Claims to the full extent of the claim scope as apparently asserted and applied in Plaintiff’s Infringement Contentions. To the extent the below discussion focuses on any asserted independent claims, the deficiencies which render the independent claims invalid under § 112, ¶ 1 also infect and thus invalidate the claims depending therefrom.

The specification of the Asserted Patents fails to provide an enabling disclosure of the Asserted Claims with respect to the following terms and/or phrases, rendering the claims of the Asserted Patents in which those phrases appear invalid for failing to comply with the enablement requirement under 35 U.S.C. § 112, ¶ 1:

- “spatial range,” as recited by Claims 1 and 185 of the ‘231 Patent

- “geographical extent,” as recited by Claims 10, 25, 36, 162, 185, and 215 of the ‘231 Patent
- “wherein for at least one of said first and second output criteria there is an output criteria for another of the location requests that is different from said at least one output criteria,” as recited by Claim 10 of the ‘231 Patent
- “wherein communication between the mobile station and at least one terrestrial transceiver is used to improve said first instance,” as recited by Claim 17 of the ‘231 Patent
- “a representation of a locus of locations having substantially a same time difference of arrival for wireless signals communicated between: the mobile station, and each of at least two of the transceivers,” as recited by Claim 17 of the ‘231 Patent
- “signal time delay dependent condition,” as recited by Claims 25 and 28 of the ‘231 Patent
- “combining said first and second location information when both are available for locating the mobile station,” as recited by Claim 27 of the ‘231 Patent
- “generating a location estimate for the unknown location of said mobile station M, said location estimate dependent upon a geographical extent output from a corresponding computational machinery implemented instance of each of at least the location technique (B2) following, and one other of the following location techniques (B1) and (B3),” as recited by Claim 36 of the ‘231 Patent
- “computational equipment including … a selection component,” as recited by Claim 185 of the ‘231 Patent
- “computational machinery performing a coverage area location technique for estimating a location of said mobile station M at a location L, wherein the estimated location is associated with an area of a wireless coverage area for one of said communication stations, wherein the estimated location is included in the resulting location estimate of the mobile station M when the first location related information is unavailable or unsatisfactory for the location L,” as recited by Claim 212 of the ‘231 Patent
- “information for determining one of a correspondence and a similarity with the corresponding signal characteristic data in the data store for one or more locations L,” as recited by Claim 36 of the ‘231 Patent
- “the location technique performs an interpolation dependent on the data pairings,” as recited by Claim 106 of the ‘231 Patent
- “determining … one or more geographical features near said at least one resulting location estimate,” as recited by Claim 56 of the ‘484 Patent

- “a selector for giving preference, as more indicative of the location L, to at least one preferred location estimate obtained from said corresponding location estimates” and “a combiner for obtaining said likely location estimate as a function of said two or more of said corresponding location estimates,” as recited by Claim 67 of the ‘484 Patent
- “wherein at least one of said steps of receiving, first obtaining, second obtaining, first transmitting, and second transmitting receives or transmits wireless location related information on a TCP/IP network,” as recited by Claim 65 of the ‘231 Patent
- “wherein said display information is for displaying a map of an area having the location estimate L, and for concurrently displaying information indicating an accuracy of the location estimate L,” as recited by Claim 69 of the ‘231 Patent
- “a resulting estimator for determining a likely location estimate of a location L of the mobile station M using two or more of said corresponding location estimates for the mobile station M at L,” as recited by Claim 67 of the ‘484 Patent

The specification of the Asserted Patents also fails to provide an enabling disclosure of the Asserted Claims that recite some form of both (i) a non-terrestrial or satellite based transmitter for determining the location of a mobile station, and (ii) a terrestrial based transmitter for determining the location of a mobile station. Accordingly, the following Asserted Claims are invalid for failing to comply with the enablement requirement under 35 U.S.C. § 112, ¶ 1:

- Claim 1 of the ‘231 Patent, which recites both “terrestrial communication stations” and “at least one non-terrestrial wireless transmitter” for “locating each terrestrial mobile station”
- Claim 10 of the ‘231 Patent, which recites both “fixed location terrestrial communication stations” and “a satellite” for “locating mobile stations”
- Claim 17 of the ‘231 Patent, which recites both “a plurality of terrestrial transceivers” and “a satellite” for “locating a wireless mobile station”
- Claim 25 of the ‘231 Patent, which recites both “one or more fixed location terrestrial stations” and “one or more satellites” for “providing a location estimate of a wireless mobile station”
- Claim 36 of the ‘231 Patent, which recites both “communication stations at terrestrial locations” and “one or more non-terrestrial communication stations” for “locating at least one mobile station”

- Claim 162 of the ‘231 Patent, which recites both “a plurality of communication stations supported on the Earth” and “one or more satellites” for “locating a terrestrial mobile station”
- Claim 67 of the ‘484 Patent, which recites both “a network of communication stations” and “one or more non-terrestrial wireless signal transmitting stations” for “for locating a plurality of mobile stations”

The specification of the Asserted Patents also fails to provide an enabling disclosure of the Asserted Claims that recite some form of determining, generating, or outputting resulting location information that is dependent upon at least one of two values obtained from location related information. Accordingly, the following Asserted Claims are invalid for failing to comply with the enablement requirement under 35 U.S.C. § 112, ¶ 1:

- Claim 1 of the ‘231 Patent, which recites “outputting a resulting location estimate of the mobile station M, a determination of said resulting location estimate is dependent upon at least one of (a) and (b) following: (a) a first value obtained from said first location related information, and (b) a second value obtained from said second location related information”
- Claim 17 of the ‘231 Patent, which recites “determining resulting location information, for each of one or more locations of said mobile station, using at least one of: a first value obtained from the first instance, and a second value obtained from the second instance”
- Claim 25 of the ‘231 Patent, which recites “outputting, to a source for accessing location data for said mobile station, resulting location information that is dependent upon: at least one of said first and second location information”
- Claim 162 of the ‘231 Patent, which recites “determining resulting location information of the mobile station using at least one of: a first value obtained from said first location related response information, and a second value obtained from said second location related response information”
- Claim 44 of the ‘484 Patent, which recites “determining resulting location information for each of the first and second mobile stations using at least one of: (c1) a first value obtained from said first location related information, and (c2) a second value obtained from said second location related information”

As such, the specification of the Asserted Patents fails to disclose in full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains how to make and

use the claimed inventions of the Asserted Claims, rendering the Asserted Claims invalid for failure to comply with the enablement requirement under 35 U.S.C. § 112, ¶ 1.

D. Additional Invalidity Positions Under 35 U.S.C. § 112

Precise identification of all of the bases upon which the Asserted Claims are invalid under 35 U.S.C. § 112, including the failure to disclose the best mode contemplated by the inventor (which does not appear to be covered by Patent Rule 3-3(d)), are likely to be revealed only after further developments in the case, including fact and expert discovery. Defendants reserve the right to amend or supplement these Supplemental Invalidity Contentions to address any invalidity arguments under 35 U.S.C. § 112 that become apparent in view of any relevant facts and information revealed during discovery.

V. ADDITIONAL INVALIDITY CONTENTIONS

Without conceding whether or not Patent Rule 3-3 requires the disclosure of invalidity contentions that are not expressly discussed in the rule, Defendants provide notice below of additional invalidity defenses under 35 U.S.C. § 101. Notwithstanding these voluntary disclosures, Defendants reserve the right to assert any additional invalidity defenses that are not expressly referenced in Patent Rule 3-3.

A. Invalidity Under 35 U.S.C. § 101

The Asserted Claims are each invalid under 35 U.S.C. § 101, as they are directed to non-patentable subject matter. For example, Asserted Claims 27, 33, 34, 36, 44, 51, and 56 of the ‘484 Patent are each invalid under 35 U.S.C. § 101 because these claims recite methods for locating mobile stations, but are not tied to any particular machine or apparatus and do not transform any particular article into a different state or thing.

As another example, Asserted Claims 1, 7, 10, 17, 25, 27, 28, 36, 65, 69, 162, 212, and 215 of the ‘231 Patent are each invalid under 35 U.S.C. § 101 because these claims also recite

methods for locating mobile stations, but are not tied to any particular machine or apparatus and do not transform any particular article into a different state or thing. Although these claims recite that the steps of each method are performed by either “computational machinery” or “computational equipment,” the mere recitation of “computational machinery” and “computational equipment” in this manner is nothing more than a field-of-use limitation and does not impose any meaningful limit on the scope of the claimed methods.

Asserted Claim 185 of the ‘231 Patent and Asserted Claim 67 of the ‘484 Patent are also invalid because, as set forth above in Section IV.A, which is incorporated as if fully set forth herein, these claims recite both apparatus and process limitations, and therefore impermissibly mix two of the statutory classes of patentable subject matter permitted by 35 U.S.C. § 101, which provides that “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor.” The combination of apparatus and process limitations or elements in a single claim renders the Asserted Claims invalid under § 101 for improperly mixing different statutory classes of subject matter (in addition to rendering the Asserted Claims invalid under § 112, ¶ 2 for indefiniteness, as described above in Section IV.A).

B. Additional Invalidity Positions

Precise identification of all of the bases upon which the Asserted Claims are invalid and/or unenforceable, including improper inventorship and the judicially-created non-statutory obviousness-type double patenting doctrine, are likely to be revealed only after further developments in the case, including fact and expert discovery. Defendants reserve the right to amend or supplement these Supplemental Invalidity Contentions to address any additional invalidity arguments that become apparent in view of any relevant facts and information revealed

during discovery or to otherwise seek to invalidate the Asserted Claims on any basis that is not required to be disclosed under Patent Rule 3-3).

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Respectfully submitted,

By: /s/

Bryant C. Boren, Jr., Lead Attorney
State Bar No. 02664100
Email: bryant.c.boren@bakerbotts.com
Christopher W. Kennerly
State Bar No. 00795077
Email: chris.kennerly@bakerbotts.com
Kevin E. Cadwell
State Bar No. 24036304
Email: kevin.cadwell@bakerbotts.com
Jon V. Swenson (pro hac vice)
jon.swenson@bakerbotts.com
BAKER BOTT S L.L.P.
620 Hansen Way
Palo Alto, California 94304
650.739.7501 – Voice
650.739.7601 – Facsimile

Chad C. Walters
State Bar No. 24034730
Email: chad.walters@bakerbotts.com
Ross G. Culpepper
State Bar No. 24069559
Email: ross.culpepper@bakerbotts.com
BAKER BOTT S L.L.P.
2001 Ross Avenue
Dallas, Texas 75201
214.953.6500 – Voice
214.953.6503 – Facsimile

*Attorneys for Defendants
AT&T Inc. and AT&T Mobility L.L.C.*

By: /s/

E. Glenn Thames, Jr.
Texas Bar No. 00785097
glennthames@potterminton.com
POTTER MINTON, P.C.
110 N. College Avenue, Suite 500
Tyler, Texas 75702
Telephone: 903-597-8311
Facsimile: 903-593-0846

Edward A. Pennington (pro hac vice)
Stephanie D. Scruggs (pro hac vice)
Siddhesh V. Pandit (pro hac vice)
MURPHY & KING, P.C.
1055 Thomas Jefferson Street, N.W., Suite 400
Washington, DC 20007
Tel: (202) 403-2100
Fax: (202) 429-4380
eap@murphyking.com
sds@murphyking.com
svp@murphyking.com

Attorneys for Defendants
***MetroPCS Communications, Inc. and MetroPCS
Wireless, Inc.***

By: /s/
Vincent J. Belusko (pro hac vice) (lead attorney)
vbelusko@mofo.com
Martin M. Noonan (pro hac vice)
mnoonan@mofo.com
Alex S. Yap (pro hac vice)
ayap@mofo.com
Jason J. Lee (pro hac vice)
jlee@mofo.com
MORRISON & FOERSTER LLP
555 West Fifth Street
Los Angeles, California 90013-1024
(213) 892-5200 (telephone)
(213) 892-5454 (facsimile)

Michael E. Jones
State Bar No. 10929400
mikejones@potterminton.com
Allen F. Gardner
State Bar No. 24043679
allengardner@potterminton.com
POTTER MINTON, P.C.
A Professional Corporation
110 N. College, Suite 500
Tyler, Texas 75702
(903) 597-8311 (telephone)
(903) 593-0846 (facsimile)

*Attorneys for Defendant
Cellco Partnership d/b/a Verizon Wireless*

By: /s/

Alan D Albright
State Bar No. 00973650
Benjamin L. Bernell
State Bar No. 24059451
Bracewell & Giuliani LLP
111 Congress Avenue, Suite 2300
Austin, Texas 78701
Tel: 512-472-7800
Fax: 800-404-3970
alan.albright@bgllp.com
ben.bernell@bgllp.com

Christopher Schenck
Admitted Pro Hac Vice
Bracewell & Giuliani LLP
701 Fifth Avenue, Suite 6200
Seattle, Washington 98104
Tel: 206-204-6200
Fax: 800-404-3970
chris.schenck@bgllp.com

Robert C. Bertin
Admitted Pro Hac Vice
Susan Baker Manning
Admitted Pro Hac Vice
Bingham McCutchen LLP
2020 K Street NW
Washington, DC 20003-1806
Tel: 202-373-6000
Fax: 202-373-6001
r.bertin@bingham.com
susan.manning@bingham.com

Michael E Jones
State Bar No. 10929400
Potter Minton PC
110 N. College, Suite 500
Tyler, Texas 75710-0359
Tel: 903-597-8311
Fax: 903-593-0846
mikejones@potterminton.com

*Attorneys for Defendant
Google, Inc.*

By: /s/

Cynthia D. Vreeland

Peter M. Dichiara

John V. Hobgood

Joshua L. Stern

**WILMER CUTLER PICKERING
HALE & DORR LLP**

60 State Street

Boston, MA 02109

Phone: (617) 526-6000

Fax: (617) 526-5000

cynthia.vreeland@wilmerhale.com

peter.dichiara@wilmerhale.com

john.hobgood@wilmerhale.com

joshua.stern@wilmerhale.com

Wesley Hill

Tex. Bar No. 24032294

WARD & SMITH LAW FIRM

111 W. Tyler St.

Longview, Texas 75601

Telephone: (903) 757-6400

Fax: (903) 757-2323

Email: wh@wsfirm.com

*Attorneys for Defendant
Skyhook Wireless, Inc.*

CERTIFICATE OF SERVICE

The undersigned hereby certifies that counsel of record for Plaintiff in the above-captioned action is being served with this document via e-mail and federal express, in accordance with Local Rules CV-5(c) and (d), on April 17, 2012.

/s/
Christopher W. Kennerly